

United States Court of Appeals for the Federal Circuit

EYAL RAZ,

Appellant,

v.

NOTICE OF APPEAL

ARTHUR M. KRIEG AND
JOEL KLINE,

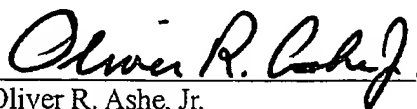
Appellees.

Eyal Raz hereby appeals to the Court under 35 U.S.C. § 141 for review of the "Memorandum Opinion and Order - Decision on Motions," Paper No. 214, filed on December 1, 2008, and the Judgment, Paper No. 215, entered on December 1, 2008, by the Board of Patent Appeals and Interferences in Interference No. 105,526. A copy of the Decision and a copy of the Judgment are enclosed.

A docketing fee in the amount of \$450.00 is provided herewith.

Respectfully submitted,

January 27, 2009



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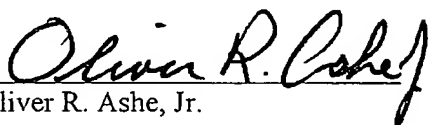
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FEDERAL CIRCUIT

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The undersigned certifies that an original and three copies of the paper entitled "NOTICE OF APPEAL" along with copies of the documents referred therein as being submitted and the docketing fee of \$450.00 were filed this 27th day of January, 2009, by Hand-Delivery, to:

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United States Court of Appeals for the Federal Circuit
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1-27-09
Date


Oliver R. Ashe, Jr.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the paper entitled "NOTICE OF APPEAL" and a copy of the documents referred therein as being submitted were served this 27th day of January, 2009, by sending in the following manner:

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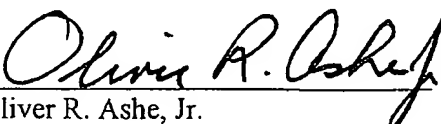
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Filed December 1, 2008

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

EYAL **RAZ**
Junior Party
(U.S. Patent 6,498,148),

v.

ARTHUR M. **KRIEG** AND JOEL KLINE
Senior Party
(U.S. Application 09/337,584).

Patent Interference No. 105,526 (MPT)
(Technology Center 1600)

Judgment – Preliminary Motions – Bd. R. 127

Before: JAMES T. MOORE, *Vice Chief Administrative Patent Judge* and
SALLY LANE and MICHAEL P. TIERNEY, *Administrative Patent Judges*.

TIERNEY, *Administrative Patent Judge*.

The Board has entered a Decision on Motions in this interference.
(Paper 214). The Decision grants Krieg Motion 2 for judgment based on
lack of enablement and/or written description. Accordingly, judgment is
entered against junior party Raz.

It is:

Ordered that judgment be entered against all of junior party Raz's

involved claims, claims 1-4 and 6-19.

Further Ordered that claims 1-4 and 6-19 of Raz's involved U.S. Patent 6,498,148 be CANCELED, 35 U.S.C. § 135(a).

Further Ordered that a copy of this judgment be entered in the administrative records of the involved Raz, U.S. Patent 6,498,148 and Krieg, U.S. Application 09/337,584.

cc (via electronic filing):

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Filed December 1, 2008

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

EYAL RAZ
Junior Party
(U.S. Patent 6,498,148),

v.

ARTHUR M. **KRIEG** AND JOEL KLINE
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(U.S. Application 09/337,584).

Patent Interference No. 105,526 (MPT)
(Technology Center 1600)

Before: JAMES T. MOORE, *Vice Chief Administrative Patent Judge* and SALLY
LANE and MICHAEL P. TIERNEY, *Administrative Patent Judges*.

TIERNEY, *Administrative Patent Judge*.

MEMORANDUM OPINION and ORDER
Decision on Motions

1 This interference is before a motions panel for a decision on preliminary
2 motions. An oral argument took place in this interference, a transcript of which
3 appears in the record. (Paper 197). Representing Junior Party Raz was Oliver
4 Ashe, Jr. Senior Party Krieg was represented by Lawrence Green.

5 I. Introduction

6 This interference is directed to a method for treating asthma comprising
7 administering an effective amount of an immunostimulatory polynucleotide.

8 As stated by Raz, asthma is an inflammatory disorder that is characterized
9 by inflamed airway passages, which causes shortness of breath. The most common
10 type of asthma is allergic asthma, which refers to asthma triggered by an antigen.
11 An immune response to an antigen generally involved two types of T helper cells,
12 T helper 1 (Th1) and T helper 2 (Th2). Asthma and allergy generally involve a
13 Th2 immune response. Immunostimulatory sequences (ISS) may be capable of
14 shifting an immune response from a Th2 response to a Th1 response, which would
15 reduce or suppress allergic inflammation. (Raz Motion 1, Paper 45, p. 5, l. 14 to p.
16 6, l. 9).

17 There are twelve (12) motions awaiting decision. Raz filed seven motions
18 and Krieg five motions.

19 Raz filed a motion for judgment against Krieg based on lack of written
20 description and/or enablement. Raz also filed a motion for judgment based on
21 prior art alleging that Krieg is not entitled to 35 U.S.C. § 120 benefit due to a lack
22 of written description and/or enablement. Further, Raz filed a motion for judgment
23 that Raz's claims do not interfere-in-fact with Krieg's. We deny Raz's motions for
24 judgment.

25 Krieg filed a motion for judgment that all of Raz's involved claims are
26 unpatentable for lack of written description and/or enablement. We grant Krieg's
27 motion as Raz's claims encompass the use of immunostimulatory plasmids, the use

1 of which was, and remains, unpredictable.

2 Raz filed a responsive motion requesting that the Board exercise its
3 discretion and redeclare the interference to include a new Raz application and
4 claim and substitute a count in the event that all of Raz's claims be held
5 unpatentable. On this record, Raz has demonstrated that its new claim is
6 patentable to Raz and interferes-in-fact with Krieg. As all of Raz's presently
7 involved claims are unpatentable to Raz and as Raz has requested an interference
8 with a new application and count, we enter judgment against Raz's involved claims
9 and exercise our discretion to authorize the declaration of a new interference
10 between Raz's additional application and Krieg's involved '584 application.

11 The remaining motions are dismissed as moot as they request judgment
12 against Raz's already unpatentable claims, seek to designate claims as
13 corresponding to the present count, have contingencies that did not come to pass,
14 or seek to exclude evidence we have not relied upon.

15

16 II. Findings of Fact

17 The following findings of fact are believed to be supported by a
18 preponderance of the evidence. To the extent that a finding of fact is a conclusion
19 of law, it may be treated as such. Additional findings, as necessary, may appear in
20 the Discussion portion of the opinion.

21

22 A. The Real Parties in Interest

23 1. Junior Party Raz

24 1) The Regents of the University of California is the real party in interest in
25 Raz's involved U.S Patent 6,498,148. (Raz Real Party in Interest, Paper 10).

26

1 2. Senior Party Krieg

2 2) Krieg's involved U.S. Application 09/337,584 has been assigned to the
3 University of Iowa Research Foundation and the United States of America as
4 represented by the Secretary, Department of Health and Human Services. (Krieg
5 Real Party in Interest, Paper 5).

6

7 B. Accorded Priority Benefit

8 1. Junior Party Raz

9 3) Raz is involved in the interference based upon U.S. Patent 6,498,148, issued
10 December 24, 2002, filed January 21, 1999. (Notice Declaring Interference, Paper
11 1, p. 3).

12

13 4) Raz has been accorded an earlier constructive reduction to practice (*i.e.*,
14 benefit for the purpose of priority) based on the following application:

15 i) U.S. Application 08/927,120, filed September 5, 1997.
16 (Redeclaration, Paper 22).

17

18 1. Senior Party Krieg

19 5) Krieg is involved in the interference based upon U.S. Application
20 09/337,584, filed June 21, 1999. (Paper 1, p. 3).

21

22 6) Krieg has been accorded an earlier constructive reduction to practice (*i.e.*,
23 benefit for the purpose of priority) based on the following applications:

24 i) U.S. Application 08/960,774, filed October 30, 1997, now U.S. Patent
25 6,239,116, issued May 29, 2001;

26 ii) U.S. Application 08/738,652, filed October 30, 1996, now U.S. Patent
27 6,207,646, issued March 27, 2001.

1 (Redeclaration, Paper 22).

2

3 C. Count and Claim Correspondence

4 7) There is a single count in the interference, Count 1, which reads as follows:

5 A method for treating asthma according to Claim 17 of U.S. Patent

6 6,498,148 or claim 44 of U.S. Application 09/337,584.

7 (*Id.*).

8

9 8) Raz '148 claim 17 depends from Raz claim 1. Raz claims 1 and 17 read as
10 follows:

11

12 1. A method for treating asthma, comprising: administering to a
13 mammal sensitized to an asthma-stimulating antigen an
14 immunostimulatory polynucleotide comprising an immunostimulatory
15 sequence (ISS), wherein the ISS comprises the sequence 5'-cytosine
16 guanine-3', wherein the immunostimulatory polynucleotide does not
17 comprise a nucleotide sequence encoding the antigen, and wherein the
18 immunostimulatory polynucleotide is administered without the
19 antigen, including without a polynucleotide encoding the antigen, and
20 in an amount sufficient to treat asthma.

21

22 17. The method of claim 1, wherein the ISS is at least six
23 nucleotides in length.

24

25 (Raz Clean Copy of Claims, Paper 8).

26

27 9) Krieg '584 claim 44 reads as follows:

28 A method for treating asthma in a subject, comprising
29 administering to an asthmatic subject an effective amount for treating
30 asthma in the subject of an immunostimulatory nucleic acid, having a
31 sequence including at least the following formula:

32

1 5' X₁ X₂ CGX₃ X₄ 3'

2
3 wherein C is unmethylated, wherein X₁X₂ and X₃X₄ are nucleotides,
4 wherein the nucleic acid has a length of 8 to 100 nucleotides.

5
6 (Krieg Clean Copy of Claims, Paper 3).

7
8 10) The claims of the parties are:

9 Krieg '584: 42-47, 49-53, 56-57, 82-85, 90, 92, 94, 96,
10 98, 100, 102-103

11 Raz '148: 1-19

12
13 (Paper 22, p. 2).

14
15 11) The claims of the parties that correspond to Count 1 are:

16 Krieg '584: 42-45, 47, 49-53, 57, 90, 92, 94, 96,
17 98, 100, 102-103

18 Raz '148: 1-4 and 6-19

19 (*Id.*)

20
21 12) The claims of the parties that do not correspond to Count 1 are:

22 Krieg '584: 46, 56, 82-85

23 Raz '148: 5

24 (*Id.*).

25
26 D. One of Ordinary Skill in the Art

27 13) The art in this interference relates to the field of immunology, in particular
28 allergic asthma therapy and manipulating immune responses through the use of an
29 immunostimulatory sequence (ISS). (Declaration of Dr. Robert Schleimer, RX
30 2001, ¶ 15; Declaration of Dr. David M. Center, KX 1003, ¶ 10).

31

1 14) A person of ordinary skill in the immunological arts would have an
2 advanced degree, M.D. or Ph.D., in immunology, molecular biology or similar
3 discipline and several years of laboratory or clinical experience with immune
4 responses and/or asthma. (*Id.* at ¶ 16 and KX 1003 at ¶ 10).

5
6 E. Testifying Expert Qualifications

7 We find that the following experts are sufficiently qualified to give
8 testimony with respect to the particular facts and techniques known by one of
9 ordinary skill in the field of immunology and in particular, allergic asthma therapy.

10
11 1. Raz's Expert – Dr. Robert Schleimer (RX 2001)

12 15) Dr. Schleimer received a Ph.D. in Pharmacology and Toxicology from the
13 University of California, Davis in 1980. (RX 2001, ¶ 2).

14
15 16) Dr. Schleimer is presently a Professor of Medicine and Chief of the Allergy-
16 Immunology Division at Northwestern University Feinberg School of Medicine.
17 (*Id.* at ¶ 1).

18
19 17) Dr. Schleimer is said to be an expert on innate immune responses and their
20 relationship to allergic disease and has investigated the mechanisms involved in
21 allergic diseases such as asthma. (*Id.* at ¶ 3).

22
23 2. Krieg's Experts

24 a. Dr. David M. Center (KX 1003)

25 18) Dr. David Center received a medical degree from Boston University in 1972.
26 (Center Curriculum Vitae, KX 1004).

1 19) Dr. Center has held numerous positions including Research Fellow in
2 immunology at Harvard Medical Center from 1975-1978 as well as various
3 academic appointments including Professor of Medicine at Boston University
4 School of Medicine since 1989. (KX 1003, ¶ 2).

5
6 20) Dr. Center has received numerous honors and awards for his work and has
7 been an Associate Editor, Editorial Board member and a primary reviewer for
8 various journals concerning immunology and lungs, e.g., Journal of Immunology.
9 (*Id.* at ¶¶ 3-4).

10
11 b. Dr. Barbara P. Wallner

12 21) Dr. Wallner received a Ph.D. in Biochemistry from the University of Illinois
13 in 1980. (KX 1011, ¶ 2).

14
15 22) Dr. Wallner has worked in a variety of positions including the discovery and
16 development of allergy and autoimmune therapeutics from 1992 as the Director of
17 Biochemistry, Vice President of Preclinical Research and Vice President of
18 Research at Immunologic Pharmaceuticals, Inc. (*Id.* at ¶ 4).

19
20 23) Dr. Wallner has received numerous awards and honors for her work and has
21 been a member of the American Association of Immunologists since 1998. (*Id.*
22 at ¶ 3).

23
24 III. Opinion

25 There are twelve pending motions. The rules authorize the Board to take up
26 motions for decision in any order. 37 C.F.R. § 41.125(a). We elect to first
27 consider Raz's motion for judgment that Krieg's claims lack sufficient written

1 description and/or enablement.

2
3 A. Raz Substantive Motion 1 for Judgment Based on Lack of Sufficient
4 Written Description and/or Enablement

5
6 Raz Motion 1 requests that the Board enter judgment that all of Krieg's
7 involved claims are unpatentable to Krieg for lack of written description and/or
8 enablement under 35 U.S.C. § 112, 1st paragraph. (Paper 45). According to Raz,
9 the breadth of Krieg's involved claims renders them unpatentable to Krieg as Krieg
10 allegedly failed to describe and/or teach how to make and use a method of treating
11 asthma absent the co-administration of an antigen. (*Id.* at p. 2, l. 13 to p. 3, l. 16).
12 Krieg opposes. (Paper 98).

13
14 1. Burden of Proof

15 The rules provide for the following burden of proof:

16 To be sufficient, a motion must provide a showing, supported with
17 appropriate evidence, such that, if unrebutted, it would justify the
18 relief sought. The burden of proof is on the movant.

19
20 37 C.F.R. § 41.208(b). For the motions before us, the burden of proof is by a
21 preponderance of the evidence. The burden of showing something by a
22 preponderance of the evidence simply requires the trier of fact to believe that the
23 existence of a fact is more probable than its nonexistence before the trier of fact
24 may find in favor of the party who carries the burden. *Concrete Pipe & Products*
25 *of California, Inc. v. Construction Laborers Pension Trust for Southern California*,
26 508 U.S. 602, 622, 113 S. Ct. 2264, 2279 (1993). Yet, in rendering factual
27 findings:

28 . . . it is impermissible for the Board to base its factual findings on its
29 expertise, rather than on evidence in the record, although the Board's
30 expertise appropriately plays a role in interpreting record evidence.

1 *Brand v. Miller*, 487 F.3d 862, 869 (Fed. Cir. 2007).

2

3 2. Claim Construction

4 We construe the claims beginning with the plain language of the claims but
5 look to the specification to determine whether the inventor specifically defined the
6 terms in the claims or disavowed certain embodiments. *Phillips v. AWH Corp*, 415
7 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc). In construing the claims the United
8 States Patent & Trademark Office is tasked with interpreting claims as broadly as
9 their terms reasonably allow as they would be understood by one of ordinary skill
10 in the art, taking into account whatever enlightenment by way of definitions or
11 otherwise may be afforded by written description contained in applicant's
12 specification. *In re Morris*, 127 F.3d 1048, 1054-55 (Fed. Cir. 1997); *In re Zletz*,
13 893 F.2d 319, 321 (Fed. Cir. 1989) (Board erred in reading unwritten limitations
14 into claims on appeal and stated that it was incorrect for the Board to construe
15 claims narrowly, such as done in courts confronting issues of infringement and
16 validity).

17 Each of Krieg's involved claims is directed to a method of treating asthma
18 comprising administering an ISS to an asthmatic subject. Raz contends that
19 Krieg's claims encompass two subgenres:

20 1) Co-administration of an ISS and antigen; and

21 2) Administration of an ISS without co-administration of an antigen.

22 (Paper 45, facts 6 and 7). Raz contends however, that specification fails to provide
23 a sufficient written description and/or enablement for administering ISS without an
24 antigen. (Paper 45, p. 3, ll. 4-11).

25 Krieg admits that its involved claims encompass a method of treating asthma
26 wherein an antigen is co-administered with the CG nucleic acid (ISS) as well as
27 methods wherein an antigen is not co-administered with the CG nucleic acid.

1 (Paper 98, p. 1, ll. 6-9 and admitting facts 6 and 7).

2 We agree with the parties that Krieg's claims encompass administration of
3 an ISS with or without co-administration of the antigen. Specifically, the plain
4 language of Krieg's claims does not require the co-administration of the antigen.
5 Further, as discussed in detail below, Krieg's specification does not limit Krieg's
6 invention to co-administration of the ISS and antigen. Accordingly, the parties'
7 agreed upon construction is the broadest reasonable construction of the claims
8 taken in light of Krieg's specification.

9

10 3. Written Description and Enablement

11 a. Principles of Law

12 While the specifics of the cases concerning adequate written description
13 vary, the cases agree that the inquiry is factual and must be assessed on a case-by-
14 case basis. Moreover, because of the fact-sensitive nature of the written
15 description inquiry, the Federal Circuit has advised against misapplication of
16 precedent in this area. *See, Union Oil Co. of California v. Atlantic Richfield Co.*,
17 208 F.3d 989, 1000 (Fed. Cir. 2000).

18 The purpose of the written description requirement is to clearly allow
19 persons of ordinary skill in the art to recognize that the inventor invented what is
20 claimed. *In re Gosteli*, 872 F.2d 1008, 1012 (Fed. Cir. 1989). Thus, the question
21 is whether the specification "reasonably conveys" to a person skilled in the art that
22 the inventor had possession of the claimed subject matter. *Bilstad v. Wakalopoulos*,
23 386 F.3d 1116, 1126 (Fed. Cir. 2004). The inventor can reasonably convey
24 possession by such descriptive means as words, structures, figures, diagrams,
25 formulas, etc., that fully set forth the claimed invention. *Lockwood v. American*
26 *Airlines, Inc.*, 107 F.3d 1565, 1571-72 (Fed. Cir. 1997).

1 To comply with the enablement requirements of 35 U.S.C. § 112, first
2 paragraph, a specification must adequately teach how to make and how to use a
3 claimed invention throughout its scope, without undue experimentation. *Plant*
4 *Genetic Systems N.V. v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1339 (Fed. Cir.
5 2003). Naturally, the specification must teach those of skill in the art “how to
6 make and how to use the invention as broadly as it is claimed.” *In re Vaeck*, 947
7 F.2d 488, 496 (Fed. Cir. 1991).

8 There are a variety of factors which may be considered in determining
9 whether a disclosure would require undue experimentation. These factors include:
10 (1) the quantity of experimentation necessary, (2) the amount of direction or
11 guidance presented, (3) the presence or absence of working examples, (4) the
12 nature of the invention, (5) the state of the prior art, (6) the relative skill of those in
13 the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the
14 claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). Not all of these factors
15 need be reviewed to determine enablement. *Amgen, Inc. v. Chugai Pharm. Co.,*
16 *Ltd.*, 927 F.2d 1200, 1213 (Fed. Cir. 1991) (noting that the Wands factors “are
17 illustrative, not mandatory. What is relevant depends on the facts.”).

18 Additionally, in analyzing the *Wands* factors, we are mindful that a patent
19 specification need not teach, and preferably omits, what is well known in the art.
20 *Spectra Physics Inc. v. Coherent Inc.*, 827 F.2d 1524, 1534 (Fed. Cir. 1987).

21 Compliance with 35 U.S.C. § 112, first paragraph is as of the filing date of
22 the application relied on, not the filing date of an ancestor application. *Microsoft v.*
23 *Reiffin*, 214 F.3d 1342, 1346 (Fed. Cir. 2000).

24 The filing date of the involved Krieg ‘584 application is June 21, 1999.
25 (Paper 1, p. 3). Accordingly, the date for compliance with 35 U.S.C. § 112, 1st
26 paragraph for Krieg’s ‘584 application is **June 21, 1999**.

27

1 b. Findings of Fact

2 The following findings of fact present relevant highlights regarding Krieg's
3 written description and enablement for its involved claims. The findings are
4 supported by at least a preponderance of the evidence.

5
6 i. Krieg's Involved '584 Specification

7 24) Krieg's specification states that its field of the invention relates to
8 oligonucleotide immunostimulatory sequences ("ISS") having at least one
9 unmethylated CpG (cytosine-guanine) dinucleotide. (RX 2004, p. 2, ll. 14-16).¹

10
11 25) Krieg's specification summarizes its invention as being based on the
12 following understanding:

13 The present invention is based on the finding that certain nucleic acids
14 containing unmethylated cytosine-guanine (CpG) dinucleotides
15 activate lymphocytes in a subject and redirect a subject's immune
16 response from a Th2 to a Th1 (e.g., by inducing monocytic cells and
17 other cells to produce Th1 cytokines, including IL-12, IFN-γ and GM-
18 CSF). Based on this finding, the invention features, in one aspect,
19 novel immunostimulatory nucleic acid compositions.

20
21 (*Id.* at p. 7, l. 31 to p. 8, l. 4).

22
23 26) Krieg's specification states that its nucleic acid sequences can be used to
24 treat or prevent disorders, such as asthma. Specifically, Krieg states:

25 The nucleic acid sequences of the invention can also be used to treat,
26 prevent or ameliorate other disorders (e.g., a tumor or cancer or a
27 viral, fungal, bacterial or parasitic infection). In addition, the nucleic
28 acid sequences can be administered to stimulate a subject's response to

¹ The pages in Krieg's '584 specification were apparently renumbered by hand. For convenience we refer to the typewritten numbers appearing at the top of the page.

1 a vaccine. *Furthermore, by redirecting a subject's immune response*
2 *from Th2 to Th1, the claimed nucleic acid sequences can be used to*
3 *treat or prevent an asthmatic disorder.* In addition, the claimed
4 nucleic acid molecules *can be* administered to a subject in conjunction
5 with a particular allergen as a type of desensitization therapy to treat
6 or prevent the occurrence of an allergic reaction associated with an
7 asthmatic disorder.

8
9 (*Id.* at p. 9, ll. 5-12, emphasis added).

10
11 27) The '584 specification defines allergy and asthma as follows:

12 An "allergy" refers to acquired hypersensitivity to a substance
13 (allergen). Allergic conditions include eczema, allergic rhinitis or
14 coryza, hay fever, bronchial asthma, urticaria (hives) and food
15 allergies, and other atopic conditions.

16
17 "Asthma"--refers to a disorder of the respiratory system characterized
18 by inflammation, narrowing of the airways and increased reactivity of
19 the airways to inhaled agents. Asthma is frequently, although not
20 exclusively associated with atopic or allergic symptoms.

21
22 (*Id.* at p. 13, ll. 26-31).

23
24 28) The specification further states that:

25 In another aspect, the nucleic acid sequences of the invention are
26 useful as an adjuvant for use during antibody production in a
27 mammal. Specific, but non-limiting examples of such sequences
28 include: TCCATGACGTTTCCTGACGTT (SEQ ID NO: 10),
29 GTCGTT (SEQ. ID. NO:57), GTCGCT (SEQ. ID. NO: 58),
30 TGTCGCT (SEQ. ID. NO: 101) and TGTCGTT (SEQ. ID. NO: 102).

31 *Furthermore, the claimed nucleic acid sequences can be*
32 *administered to treat or prevent the symptoms of an asthmatic*
33 *disorder by redirecting a subject's immune response from Th2 to*
34 *Th1.* An exemplary sequence includes
35 TCCATGACGTTTCCTGACGTT (SEQ ID NO.10).

36
37 (*Id.* at p. 17, ll. 10-17, emphasis added).

1 29) The specification states that the nucleic acids of the invention may have
2 significant therapeutic utility in treatment of asthma as follows:

3 *Nucleic acids containing unmethylated CpG motifs may also*
4 *have significant therapeutic utility in the treatment of asthma.* Th2
5 cytokines, especially IL-4 and IL-5 are elevated in the airways of
6 asthmatic subjects. These cytokines promote important aspects of the
7 asthmatic inflammatory response, including IgE isotype switching,
8 eosinophil chemotaxis and activation and mast cell growth. Th1
9 cytokines, especially IFN- γ and IL-12, can suppress the
10 formation of Th2 clones and production of Th2 cytokines.

11 As described in detail in the following Example 12,
12 oligonucleotides containing an unmethylated CpG motif (i.e.,
13 TCCATGACGTTTCCTGACGTT; SEQ ID NO. 10), but not a control
14 oligonucleotide (TCCATGAGCTTCCTGAGTCT; SEQ ID NO. 8)
15 prevented the development of an inflammatory cellular infiltrate and
16 eosinophilia in a murine model of asthma. Furthermore, the
17 suppression of eosinophilic inflammation was associated with a
18 suppression of a Th2 response and induction of a Th1 response.

19
20 (*Id.* at p. 53, l. 26 to p. 54, l. 5).

21

22 30) The specification defines an effective amount of its nucleic acid as follows:

23 The term "effective amount" of a nucleic acid molecule refers to the
24 amount necessary or sufficient to realize a desired biologic effect. . . .
25 An "effective amount" for treating asthma can be that amount useful
26 for redirecting a Th2 type of immune response that is associated with
27 asthma to a Th1 type of response.

28

29 (*Id.* at p. 54, ll. 21-28).

30

31 31) Krieg's '584 specification does not contain an explicit statement that limits
32 Krieg's method of treating asthma to the coadministration of a nucleic acid ISS
33 and an antigen.

34

35

1 *Broide '98 Article*

2 36) In 1998 Broide and Raz, among others, authored an article reporting on ISS
3 and its ability to significantly inhibit airway eosinophilia. (RX 2012, abstract).²

4
5 37) The Broide article provides the following statement under the heading
6 “Discussion:”

7 In this study, we demonstrate that ISS inhibits airway eosinophilia and
8 prevents the development of airway hyperresponsiveness. *These*
9 *observations are similar to those noted by Kline et al. (20) [Kline's*
10 *'98 article] in a different mouse model of airway inflammation. In*
11 *the present study, we have extended these observations by*
12 demonstrating 1) the novel mechanism by which ISS inhibits airway
13 eosinophilia through inhibition of the production and release of
14 eosinophilia from the bone marrow; 2) that inhibition of bone marrow
15 production of eosinophils was associated with a significant inhibition
16 of IL-5, GM-CSF, and IL-3 production; 3) that ISS exerted this
17 inhibitory effect on T cell cytokine production indirectly by
18 stimulating monocytes/macrophages and NK cells to generate IL-12
19 and IFNs, as demonstrated in in vitro neutralizing Ab studies; 4) that
20 the effect of ISS on reducing the number of tissue eosinophils was
21 both immediate (onset within 1 day) and sustained (over 6 days), and
22 was not due to ISS directly inducing eosinophil apoptosis; 5) that ISS
23 was effective in inhibiting eosinophilic airway inflammation when
24 administered either systemically or mucosally (i.e., i.n or i.t); 6) that a
25 single administration of ISS (systemic or mucosal) inhibited airway
26 eosinophilia as effectively as daily systemic administrations of
27 corticosteroids for 7 days; and 7) that while both ISS and
28 corticosteroids inhibited IL-5 generation, only ISS was able to induce
29 IFN-γ (a cytokine that importantly biases the immune system to
30 generate a Th1 and not a Th2 response to subsequently encountered
31 allergens). Thus, systemic or mucosal administration of ISS before
32 allergen exposure provides a novel form of active immunotherapy in

² Broide *et al.*, “Immunostimulatory DNA Sequences Inhibit IL-5,
Eosinophilic Inflammation, and Airway Hyperresponsiveness in Mice,” *J.*
Immunol. 161: 7054-7062 (1998) (RX 2012).

1 allergic diseases.

2
3 (RX 2012, p. 7059, col. 2 to 7060, col. 2).

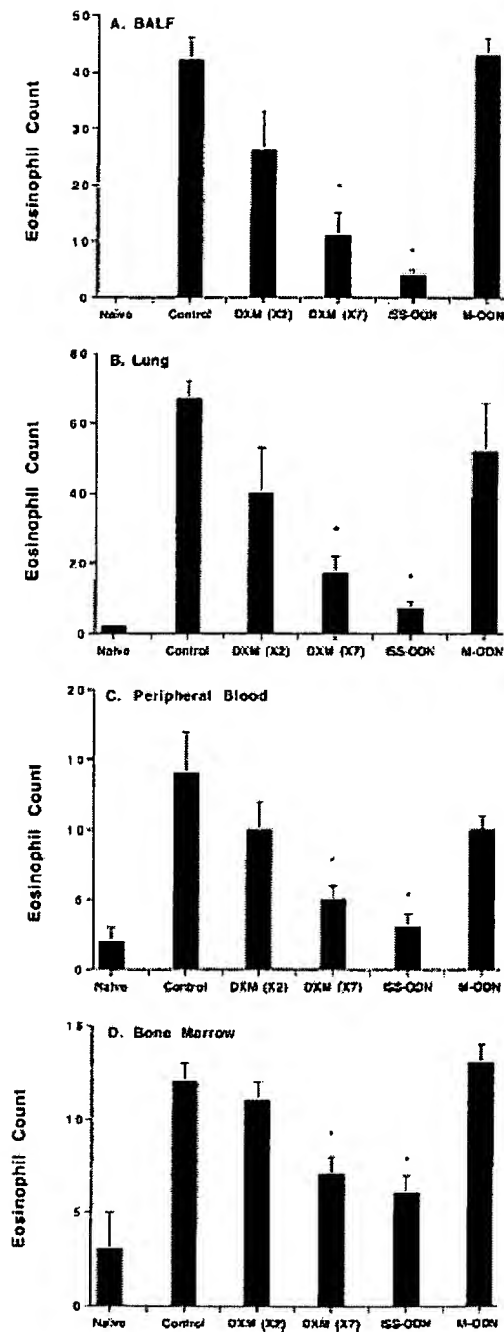
4
5 38) We credit Broide's contemporaneous statement that its observations are
6 similar to those noted in Kline's 1998 article. (*Id.*).

7
8 39) We credit Broide's contemporaneous statement that its observations are an
9 extension of those noted in the Kline '98 article. (*Id.*).

10
11 40) Raz's expert, Dr. Schleimer, testifies that Broide's 1998 article (RX 2012)
12 investigated the administration of ISS-ODN alone, in the absence of antigen
13 challenge, in a mouse model of asthma. (RX 2001, ¶¶ 92-93, citing RX 2012,
14 abstract and p. 7058).

15
16 41) One of ordinary skill in the art would have known that high levels of
17 eosinophil infiltration is indicative of asthma. (*Id.* at ¶ 49).

18
19 42) Figure 4 of Broide's 1998 article reports the effects of systemic ISS or
20 corticosteroids on BALF, lung, blood and bone marrow eosinophil levels as
21 follows in graphical format:



The levels reported above in Figure 4 are for groups of mice sensitized and challenged with an antigen (OVA) or OVA sensitized and pretreated with either ISS-ODN or M-ODN before the first OVA inhalation challenge. (*Id.* at p. 7060).

1 43) Broide demonstrates that ISS induced Th1 cytokine production and inhibited
2 Th2 cytokine production and eosinophilic inflammation when ISS was
3 administered before or co-administered with allergen challenge. (RX 2001, ¶ 94,
4 citing RX 2012, p. 7059-7061).

5
6 44) Broide demonstrates that ISS can inhibit Th2 cytokines in the presence or
7 absence of antigen challenge. (*Id.*).

8
9 45) Dr. Schleimer testifies that one of ordinary skill in the art would have
10 considered it relevant that all of Broide's treatments with ISS were performed in
11 mice that had been sensitized by repeated administration of antigen but Dr.
12 Schleimer does further explain the relevancy of this testimony. (RX 2001, ¶ 95).

13
14 46) One of ordinary skill in the art in 1999 understood that an ISS can inhibit
15 Th2 cytokines and airway eosinophilia in the presence or absence of antigen
16 challenge. (Dr. Schleimer Declaration, RX 2001, ¶ 94, citing Broide '98 article,
17 RX 2012).

18
19 c. Analysis of Krieg's Written Description

20 1. Krieg's '584 Specification Encompasses Methods
21 of Treating Asthma Using ISS With or Without
22 Co-administration of an Antigen
23

24 Raz contends that one of ordinary skill in the art would not have considered
25 Krieg to be in possession of a method of treating asthma comprising administering
26 an ISS without co-administration of an ISS. (Paper 45, p. 7, ll. 3-6). Raz
27 summarizes its interpretation of Krieg's specification as follows:

28 Below, various portions of the Krieg Specification are considered. In

1 certain instances, the Krieg Specification describes a method of
2 treating or preventing asthma by co-administration of an ISS with an
3 antigen. See, Facts 29 and 32. In other instances, the Krieg
4 Specification generically refers to methods of treating or preventing
5 asthma using an ISS, without reference to the presence or absence of
6 an antigen. See, Fact 42. Significantly, there is not a single instance
7 wherein the Krieg Specification describes a method of treating or
8 preventing asthma comprising the administration of an ISS without
9 co-administration of an antigen. See, Fact 22. Accordingly, one of
10 ordinary skill in the art would not have considered the Krieg
11 Specification to describe or enable a method of treating asthma by
12 administering ISS without co-administering an antigen.

13
14 (Paper 45, ll. 7-15).

15 The plain language of Krieg's '548 specification does not limit Krieg's
16 method of treating asthma to the co-administration of ISS and an antigen. For
17 example, Krieg's specification provides the following statements:

18
19 *Furthermore, by redirecting a subject's immune response from Th2*
20 *to Th1, the claimed nucleic acid sequences can be used to treat or*
21 *prevent an asthmatic disorder.* In addition, the claimed nucleic acid
22 molecules *can be* administered to a subject in conjunction with a
23 particular allergen as a type of desensitization therapy to treat or
24 prevent the occurrence of an allergic reaction associated with an
25 asthmatic disorder. (RX 2004, p. 9, ll. 8-12, emphasis added).

26
27 *Furthermore, the claimed nucleic acid sequences can be*
28 *administered to treat or prevent the symptoms of an asthmatic*
29 *disorder by redirecting a subject's immune response from Th2 to*
30 *Th1.* An exemplary sequence includes
31 TCCATGACGTTCCTGACGTT (SEQ ID NO:10). (*Id.* at p. 17, ll.
32 14-17, emphasis added).

33
34 The term "effective amount" of a nucleic acid molecule refers to the
35 amount necessary or sufficient to realize a desired biologic effect. . . .
36 An "effective amount" for treating asthma can be that amount useful
37 for redirecting a Th2 type of immune response that is associated with
38 asthma to a Th1 type of response. (*Id.* at p. 54, ll. 21-28).

1 Krieg's specification, as evident from the passages above, contemplates the
2 treatment of asthma by redirecting a subject's immune response from a Th2 to Th1
3 response. Krieg accomplishes this by administering an ISS to an asthma patient.
4 The ISS "can" be administered in conjunction with an antigen, but "can" does not
5 mean "must." Accordingly, Krieg teaches that the ISS "can be" administered in
6 conjunction with an antigen but that the antigen is not required.

7 Raz's arguments against Krieg's possession are premised on the theory that
8 treatment of asthma would involve the co-administration of an antigen. (Paper 45,
9 p. 7, ll. 16-21). Based on this expectation, Raz argues that Krieg's statements of
10 treating asthma using an ISS do not describe a specific method and therefore do
11 not describe treating with ISS alone. (*Id.*, e.g., p. 8, l. 19 to p. 9, l. 9).

12 Raz's arguments do not demonstrate that the plain language of Krieg's
13 specification fails to reasonably convey what it claims as its invention. Rather,
14 Raz's arguments regarding what one of ordinary skill in the art would have
15 expected at the relevant time are more akin to an attack on Krieg's utility, an issue
16 that has not been explicitly argued on this record. Regardless, as explained below
17 with respect to enablement, one of ordinary skill in the art in 1999 would have
18 understood Krieg as teaching the use of a known class of compounds (ISS) in an
19 known manner (administration to an asthmatic subject) to treat a known disorder
20 (asthma). (See, Broide '98, RX 2012, Raz Reply 6, Paper 121, p. 3, ll. 11-21, p. 7,
21 ll. 2-8). Accordingly, we find that Raz has failed to provide sufficient and credible
22 evidence to demonstrate that Krieg lacks sufficient written description for its
23 method of treating asthma with an ISS.

24

1 d. Enablement Analysis of Krieg's Disclosure

2 Raz contends that Krieg's involved claims are unpatentable because Krieg
3 does not enable the full scope of the claimed invention. Specifically, Raz contends
4 that Krieg does not teach how to make or use a method of treating an asthma using
5 an ISS without the co-administration of an antigen. Raz does not contend that
6 Krieg's specification lacks an enabling disclosure for treating asthma where an ISS
7 and an antigen are co-administered. (See, e.g., Paper 45, p. 16, ll. 21-23).

8 Raz directs our attention to three of the eight *Wands* factors to support its
9 position. (Paper 45, p. 15, l. 15-18). Specifically, Raz contends that the state of
10 the art, the breadth of the claims and the lack of direction or guidance presented in
11 the specification demonstrates that undue experimentation would be required to
12 practice the full scope of Krieg's claims. (Paper 45, p. 15, l. 19 to p. 17, l. 12).

13
14 1. State of the Art in 1999: One of Ordinary Skill in
15 the Art Understood that ISS's Can Inhibit Th2
16 Cytokines in Absence of Antigen Challenge
17

18 Raz directs our attention to Kline's '96 and '97 abstracts as well as Kline's
19 '98 article as representative of the state of the art. According to Raz:

20 One of ordinary skill in the art knowledgeable as to the state of the art
21 in 1996-1998, as reported by Kline et al., would have understood that
22 administration of ISS without co-administration of an antigen is
23 ineffective in treating asthma.

24
25 (Paper 45, p. 16, ll. 17-19). The relevant date for the state of the art is June 21,
26 1999, the filing date of Krieg's '548 application and takes into account all the
27 known prior art and is not limited to that reported by Kline. In particular, Raz's
28 arguments regarding the state of the art fail to take into account Raz's own
29 contemporaneous teachings.

30 Raz and Broide, among others, coauthored an article in 1998. (Broide '98,

1 RX 2012). The Broide '98 article investigated the administration of ISS-ODN
2 alone in a mouse model of asthma (in the absence of antigen challenge).
3 (Schleimer Declaration, RX 2001, ¶¶ 92, 93, citing RX 2012, abstract and p. 7058).
4 As acknowledged by Raz's expert, "Broide reported that ISS can inhibit Th2
5 cytokines in the presence or absence of antigen challenge." (RX 2001, ¶ 94).
6 Further, Raz's expert acknowledges that high levels of eosinophil infiltration are
7 indicative of asthma and that Broide reports inhibiting eosinophilic inflammation
8 using only an ISS. (*Id.* at ¶¶ 49, 94). Accordingly, one of ordinary skill in the art
9 in 1999 understood that an ISS could treat asthma without the co-administration of
10 an antigen.

11 Raz, and its expert, contend that one of ordinary skill in the art would have
12 considered a method of treating asthma using an ISS without the co-administration
13 of an asthma-stimulating antigen to be a significant achievement. (Paper 45, p. 7,
14 ll. 16-21). Yet, Raz and its expert fail to reconcile this belief with Broide's '98
15 publication that teaches one of ordinary skill in the art to use an ISS to treat asthma
16 without the co-administration of an antigen. Accordingly, we find that Raz has
17 failed to demonstrate that the absence of the antigen was a significant achievement
18 in 1999. Specifically, taking Broide's teachings into account, we find that one of
19 ordinary skill in the art as of the relevant date would have known that an ISS could
20 be used to treat asthma with or without the co-administration of an antigen.

21 Based on the record presented, we find that the level of skill in the art was
22 high (M.D. or Ph.D. with several years of experience, RX 2001, ¶ 15), the state of
23 the art was high (known to use ISS alone to treat asthma (RX 2012)), and the
24 breadth of the claim was reasonable in light of the state of the art and level of skill.
25 Raz is correct that Krieg's specification does not provide an example of treating
26 asthma using an ISS without the co-administration but that this factor does not
27 outweigh the high level of skill and state of the art. Balancing the *Wands* factors

1 we hold that Raz has failed to provide sufficient and credible evidence to support
2 its contention that undue experimentation was required to make and use the portion
3 of Krieg's claims that does not require the co-administration of an antigen.

4 Raz has not carried its burden of proof that Krieg's involved claims lack
5 sufficient written description and/or enablement. Raz Motion 1 is therefore
6 *denied*.

7 We do not reach the issues and evidence presented in Krieg Opposition 1 or
8 Raz Reply 1 as we have denied Raz Motion 1 for failing to make out a prima facie
9 case and the Standing Order prohibits a party from presenting new issues or
10 evidence in a reply that were necessary to make a prima facie case for the relief
11 requested in the motion. (Standing Order "SO", Paper 2 at ¶ 122.5 and 37 C.F.R.
12 § 41.122(b) "All arguments for the relief requested in a motion must be made in
13 the motion. A reply may only respond to arguments raised in the corresponding
14 motion.").

15
16 B. Raz Substantive Motion 3 for Judgment Based on Prior Art

17
18 Raz requests that Krieg's involved claims be held unpatentable under
19 35 U.S.C. § 102(b). According to Raz, Krieg's involved claims are not entitled to
20 35 U.S.C. §120 benefit of Krieg's earlier filed '652 and '774 applications. Raz
21 states that, without §120 benefit, all of Krieg's involved claims would have been
22 anticipated by Krieg's own WO 98/18810 publication. (Paper 50, p. 1, ll. 1-9).
23 Krieg opposes. (Paper 102).

24
25 1. Legal Principles: 35 U.S.C. § 120

26 35 U.S.C. §120 benefit establishes an applicant's entitlement to a given date
27 for purposes of determining the patentability of the applicant's *claims*. To obtain

1 benefit under §120, a party must establish that an earlier filed U.S. application
2 satisfies the requirements of the first paragraph of 35 U.S.C. § 112, with respect to
3 each claim for which benefit is desired. *Microsoft v. Reiffin*, 214 F.3d 1342, 1346
4 (Fed. Cir. 2000) (“Analysis of the disclosure in ancestor applications is appropriate
5 when benefit of an earlier filing is sought under 35 U.S.C. §120”). Accordingly,
6 while Raz raises arguments similar to those presented in Raz Motion 1, we review
7 the written description and enablement arguments with respect to Krieg’s earlier
8 filed ‘652 application, filed October 30, 1996, and ‘774 application, filed on
9 October 30, 1997.

11 2. Findings of Fact

12 The following findings of fact present relevant highlights regarding Krieg’s
13 written description and enablement for its involved claims in light of the ‘652 and
14 ‘774 applications. The findings below are in addition to those discussed elsewhere
15 in this decision and are supported by at least a preponderance of the evidence.

16
17 47) Krieg’s involved ‘584 application is a divisional of Krieg ‘774, and Krieg’s
18 ‘774 application is a continuation-in-part of Krieg’s ‘652 application. (RX 2004,
19 p. 1, ll. 4-5).

21 a. Krieg’s ‘774 Application (RX 2005)

22 48) The ‘584 application is a divisional of the ‘774 application and for all
23 relevant purposes appears to contain the same disclosure relating to the treatment
24 of asthma with a nucleic acid sequence. For example, the following statements
25 appear in both Krieg ‘774 and ‘584:

1 Furthermore, by redirecting a subject's immune response from Th2 to
2 Th1, the claimed nucleic acid sequences can be used to treat or
3 prevent an asthmatic disorder. In addition, the claimed nucleic acid
4 molecules *can be* administered to a subject in conjunction with a
5 particular allergen as a type of desensitization therapy to treat or
6 prevent the occurrence of an allergic reaction associated with an
7 asthmatic disorder. (RX 2004, p. 9, ll. 8-12, RX 2005, p. 10, ll. 18-22,
8 emphasis added to quotation).

9
10 Furthermore, the claimed nucleic acid sequences can be administered
11 to treat or prevent the symptoms of an asthmatic disorder by
12 redirecting a subject's immune response from Th2 to Th1. An
13 exemplary sequence includes TCCATGACGTTCCCTGACGTT (SEQ
14 ID NO:10). (RX 2004, p. 17, ll. 14-17, RX 2005, p. 20, ll. 12-14).

15
16 49) Like Krieg '584, Krieg '774 Example 12 reports that the co-administration
17 of an ISS and an antigen exhibited a reduced immune response after airway
18 challenge with SEA. (*Id.* at p. 78, ll. 15-17).

19
20 b. Krieg's '652 Application (RX 2006)

21 50) Krieg's '652 specification uses slightly different language than the '774 and
22 '584 applications to describe treating asthma with an ISS.

23
24 51) For example, Krieg's '652, states:

25 Further, by redirecting a subject's immune response from Th2 to Th1,
26 the instant claimed nucleic acid molecules can be administered to treat
27 or prevent the symptoms of asthma. In addition, the claimed nucleic
28 acid molecules can be administered in conjunction with a particular
29 allergen to a subject as a type of desensitization therapy to treat or
30 prevent the occurrence of an allergic reaction.

31
32 (RX 2006, p. 8, ll. 13-17, compare with RX 2004, p. 9, ll. 8-12, RX 2005, p.
33 10, ll. 18-22, emphasis added to quotation).

1 52) Krieg's '652 application, like the '584 and '774 applications, states:
2 Nucleic acids containing unmethylated CpG motifs may also have
3 significant therapeutic utility in the treatment of asthma. Th2
4 cytokines, especially IL-4 and IL-5 are elevated in the airways of
5 asthmatic subjects. These cytokines promote important aspects of the
6 asthmatic inflammatory response, including IgE isotype switching,
7 eosinophil chemotaxis and activation and mast cell growth. Th1
8 cytokines, especially IFN-.gamma. and IL-12, can suppress the
9 formation of Th2 clones and production of Th2 cytokines.

10

11 (RX 2006, p. 41, ll. 31-36, RX 2005, p. 66, ll. 10-15 and RX 2004, p. 53, l.
12 26 to p. 54, l. 5).

13

14 c. State of the Art

15 *Sato*

16 53) In July 1996, Sato and Raz, among others,³ reported that a characteristic of
17 ISS molecules is that they are capable of shifting an immune response from a Th2
18 response to a Th1 response. (Schleimer Declaration, RX 2001, ¶¶ 53-55, Sato, RX
19 2007).

20

21 *Kline '96 Abstract*

22 54) Kline *et al.* published an abstract in September 1996 entitled "CpG Motif
23 Oligonucleotides are Effective in Prevention of Eosinophilic Inflammation in a
24 Murine Model of Asthma." (RX 2008).

25

26 55) The '96 abstract reports that when ISS is co-administered with an antigen
27 (i.e., Schistosome eggs), immune response to subsequent SEA airway challenge

³ Sato *et al.*, "Immunostimulatory DNA Sequences Necessary for Effective Intradermal Gene Immunization." *Science* 273: 352-354 (July 19, 1996).

1 was reduced. (RX 2001, ¶ 60).

2

3 56) The '96 abstract provides the following statement:

4 Systemic administration of the oligonucleotide
5 TCCATGACGTTTCCTGACGTT, alone did not result in any
6 significant change in BAL cellularity, but when this oligonucleotide
7 [c]ontaining the CpG motif was administered simultaneously with the
8 schistosome eggs, airway eosinophilia was significantly decrease (to 7
9 +/- 5%); moderate BAL lymphocytosis (23 +/- 10%) was also
10 induced.

11

12 (RX 2008).

13

14 57) The meaning of Kline's '96 abstract regarding administration of the
15 oligonucleotide alone is open to interpretation. (RX 2001, ¶¶ 62-63).

16

17 58) For example, Kline's '96 abstract could mean that the injected ISS
18 composition did not elicit an immune response in the mouse, i.e., a control. (*Id.*).

19

20 *Kline '97 Abstract*

21 59) Kline *et al.* published an abstract in March 1997 entitled "Immune
22 Redirection by CpG Oligonucleotides: Conversion of a Th2 Response to a Th1
23 Response in a Murine Model of Asthma," J. Investig. Med. 45(3): 282A (March
24 1997) (RX 2009).

25

26 60) The '97 abstract reports that the co-administration of an ISS and an antigen
27 reduced the immune response to subsequent antigen challenge. (RX 2001, ¶ 70).

28

29 61) Kline's '97 abstract contains the following statement:

1 In addition to prevention of sensitization, CpG ODN co-administered
2 with schistosome eggs (but not CpG ODN alone) lead to decreased
3 airway eosinophilia following subsequent airway challenge with SEA.
4
5 (RX 2009).
6

7 62) One of ordinary skill in the art would have considered the above passage to
8 be ambiguous with respect to the experimental design and open to interpretation.
9 (RX 2001, ¶¶ 72-74).
10

11 63) One interpretation is that the CpG ODN (ISS) was administered alone refers
12 to a control group to demonstrate that the CpG ODN did not appear to effect
13 airway eosinophilia. (RX 2001, ¶ 73).
14

15 *Kline '98 Article*

16 64) Kline and Krieg, among others, published an article in 1998 entitled
17 “Cutting Edge: Modulation of Airway Inflammation by CpG
18 Oligodeoxynucleotides in a Murine Model of Asthma,” *J. Immunol.* 160:2555-
19 2559 (January 14, 1998). (RX 2010).
20

21 65) Kline’s 98 article reports that unmethylated CpG ODN can prevent allergen-
22 induced airway inflammation in previously sensitized mice and that CpG DNA
23 may protect against asthma. (*Id.*, abstract).
24

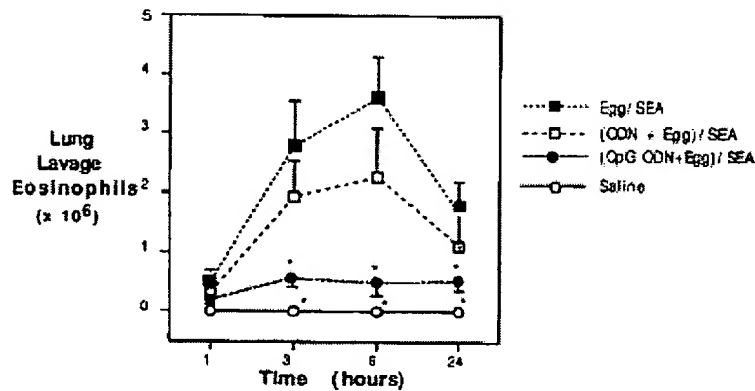
25 66) The article reports testing four sets of conditions:

- 26 1) mice sensitized with Schistosome eggs followed by airway challenge
- 27 with SEA (Egg/SEA);
- 28 2) mice given co-administration of ODN and Schistosome eggs followed

by the airway challenge with SEA (ODN + Egg)/SEA;

- 3) mice given co-administration of ISS (CpG ODN) and Schistosome eggs and then challenged with SEA (CpG ODN + Egg)/SEA; and
- 4) mice given saline alone and subsequently challenged with saline (Saline).

67) Figure 1 of Kline's '98 article graphically depicts the data from the above testing:



The above depiction shows that CpG ODN and eggs decreased the eosinophil counts as compared to eggs or ODN and eggs. (RX 2010, RX 2001, ¶ 80).

68) Kline's '98 article also reports that:

Down-regulation of Ag-driven Th2-mediated responses following sensitization is an important therapeutic goal. To investigate whether CpG DNA may overcome a preexisting Th2 response, we examined the effect of CpG ODN on eosinophilic airway inflammation in mice sensitized to SEA. All mice received schistosome eggs, were reexposed to eggs in the presence of CpG or control ODN or no ODN (day 7), and then were studied following two SEA inhalation challenges (days 14 and 21). Mice given schistosome eggs without ODN developed marked airway eosinophilia ($2.91 \pm 0.70 \times 10^6$ cells). In contrast, the mice that received CpG ODN along with eggs

(day 7) developed significantly less airway eosinophilia ($0.28 \pm 0.14 \times 10^6$ cells, $p < 0.01$), but the mice that received control ODN and eggs (day 7) developed eosinophilia similar to that of the mice that received schistosome eggs alone (Fig. 5).

These findings demonstrate that the schistosome/SEA model of asthma is characterized by IgE production, airway eosinophilia, pulmonary IL-4 secretion, and bronchial hyperreactivity, which do not develop if CpG ODN are coadministered along with the schistosome eggs. ***CpG ODN alone do not offer significant protection against the development of airway inflammation.*** In addition these effects are Ag specific; in other studies (not shown), CpG ODN can protect against the development of eosinophilic airway inflammation in an OVA murine model of asthma, but protection against OVA sensitization does not confer protection against schistosome sensitization.

(RX 2010, p. 2557, col. 1 last ¶ to p. 2558, 1st ¶).

69) Raz's expert, Dr. Schleimer, testifies that there is no data in Kline's '98 article to provide context for Kline's statement that CpG ODN does not offer significant protection. (RX 2001, ¶ 83).

70) For example, Dr. Schleimer testifies that the statement could be a reference to controls where a CpG ODN was administered to non-sensitized mice without co-administration of an antigen. (*Id.*).

71) Dr. Schleimer testifies that, even under various interpretations, Kline's '98 article does not demonstrate possession of a method of treating asthma wherein an ISS is administered without co-administration of an antigen. (*Id.*).

3. Krieg's Written Description for the '652 and '774 Applications

a. The Plain Language of the '652 and '774 Applications

1 Krieg's involved claims are directed to a method for treating asthma
2 comprising administering an ISS. The USPTO provides claims with their broadest
3 reasonable interpretation *consistent with the specification*. *Morris* at 1054-55. Raz
4 contends that the broadest reasonable interpretation of Krieg's claims is that they
5 encompass treating asthma wherein an ISS is not co-administered with an antigen.
6 (Paper 50, p. 5, ll. 14-16).

7 Raz and its expert acknowledge that Krieg's earlier specifications are similar
8 to Krieg's involved specification. (See, e.g., RX 2001, ¶ 141, Paper 50, p. 7, l. 17,
9 to p. 8, l. 4). Raz however, contends that the earlier specifications should be
10 interpreted as not describing a method of treating asthma using an ISS as the
11 specification does not literally state treat asthma by administering an ISS without
12 co-administering an antigen.

13 Specifically, Raz takes the position that Krieg's '652 and '774 applications
14 either generically refer to methods of treating asthma using an ISS or describe
15 treating asthma by co-administering an ISS with an antigen. (Paper 50, p. 5, l. 28
16 to p. 6, l. 5). Raz contends that there is not a single instance where Krieg's earlier
17 applications describe using an ISS to treat asthma without co-administering an
18 antigen. (*Id.* at p. 6, l. 5-7). From this interpretation, Raz concludes that Krieg
19 fails to describe a method of treating asthma using an ISS without an antigen. (*Id.*
20 at p. 6, ll. 8-10).

21 Both the '652 and '774 applications state that an ISS can be administered to
22 treat or prevent the symptoms of asthma. The applications state that the ISS treats
23 or prevents asthma by redirecting an immune response from a Th2 response to a
24 Th1 response. (RX 2006, p. 8, ll. 13-17, RX 2005, p. 10, ll. 18-22). Raz's expert,
25 Dr. Schleimer, testifies that this sentence merely discloses the general concept of
26 administering an ISS to treat or prevent an asthmatic disorder but does not describe
27 any specific method of administering an ISS. (RX 2001, ¶ 120).

1 Both the '652 and '774 applications teach that the ISS "can be" administered
2 in conjunction with an allergen (antigen) to treat or prevent the occurrence of an
3 allergic reaction associated with an asthmatic disorder. (*Id.*). Raz and its expert,
4 Dr. Schleimer, contend that the "can be" passage informs one of ordinary skill in
5 the art that co-administration of an ISS with an asthma-stimulating antigen could
6 be used to desensitize a subject to treat or prevent an occurrence of an allergic
7 reaction associated with an asthmatic disorder. (Paper 50, p. 7, l. 17 to p. 8, l. 6,
8 RX 2001, ¶ 121).

9 Raz and its expert conclude that the passage does not describe any specific
10 method of administering an ISS to treat or prevent asthma. (*Id.* at p. 8, ll. 10-11
11 and RX 2001, ¶ 122). Krieg's expert, Dr. Center, disagrees with Raz and Dr.
12 Schleimer's interpretation of Krieg's earlier specifications. Dr. Center testifies that
13 the "can be" language means what it says. Specifically, Dr. Center testifies that
14 Krieg's specifications inform one of ordinary skill in the art that ISS "may" be
15 administered with an antigen but does not require that the ISS be administered with
16 an antigen in order to be effective. (KX 1057, ¶ 7).

17 We credit Dr. Center's testimony over that of Dr. Schleimer on the issue of
18 written description. Dr. Center's testimony is more consistent with the plain
19 meaning of the language appearing in Krieg's '652 and '774 specifications.
20 Further, as explained below, Dr. Schleimer's testimony relies in part upon an
21 unsupported theory that one of ordinary skill in the art would have expected that an
22 effective ISS asthma treatment would have required the co-administration of an
23 antigen.

24
25 b. Raz Fails to Demonstrate that One Skilled in the Art
26 Would "Expect" That ISS Alone is Ineffective in
27 Treating Asthma
28

1 Raz's arguments and Dr. Schleimer's testimony on written description are
2 premised on the theory that one of ordinary skill in the art, at the relevant time,
3 would have expected that a method of treating an asthmatic subject by the
4 administration of an ISS would involve co-administration of an antigen. (Paper 50,
5 p. 6, ll. 11-17 and RX 2001, ¶¶ 103, 105). Raz and Dr. Schleimer however, fail to
6 provide sufficient evidence of this expectation to support such a conclusion and,
7 even if the expectation existed, that the expectation would have led one of ordinary
8 skill in the art to read a requirement into the plain language of Krieg's
9 specification.

10 Raz and Dr. Schleimer identify 1996-1999 as the relevant time frame for
11 determining the expectation of one of ordinary skill in the art. For example, Raz
12 Motion 3 states:

13 In 1996-1999, one of ordinary skill in the art would have expected
14 that a method of treating an asthmatic subject by administration of an
15 ISS would involve co-administration of the particular asthma-
16 stimulating antigen to treat the asthmatic subject.

17
18 (Paper 50, fact ¶10, citing Schleimer Declaration, RX 2001, ¶ 103, see also Raz
19 Reply 3, Paper 119, p. 9, ll. 5-10). As discussed below, even if Raz is correct and
20 the state of the art for the '652 and '774 applications extends to what was shown in
21 1999, Raz has failed to properly take into account Raz's own contemporaneous
22 publication, Broide '98, which reports using an ISS to treat asthma without co-
23 administering an antigen.

24 Raz relies upon Kline's '96 and '97 abstracts and '98 article as follows for
25 the proposition that:

26 Several reports in 1996-1998 that were authored by the named Krieg
27 inventors of the earlier filed Krieg applications indicate that
28 administering ISS without co-administering an antigen is not effective
29 in preventing or treating asthma. See, Facts 37-59. This is further
30 evidence that the earlier-filed Krieg applications did not describe a

1 broad claim encompassing a method of treating asthma by
2 administering ISS.

3
4 (Paper 50, p. 10, ll. 18-22). The Kline '96 and '97 abstracts and the '98 article
5 contain ambiguity and are open to interpretation. As discussed below, we find that
6 the abstracts and article do not establish that one of ordinary skill in the art would
7 understand that ISS without co-administration of an antigen is ineffective in
8 treating asthma.

9 Kline's '96 abstract describes an experiment where ISS and Schistosome
10 eggs were co-administered to mice, followed by SEA airway challenge. The Kline
11 abstract contains the statement that systemic administration of the ISS alone did
12 not result in significant change in BAL cellularity. This statement can be
13 interpreted in various ways, e.g., the statement could be a reference to a control
14 composition that did not stimulate an immune response in non-sensitized mice.
15 (RX 2001, ¶ 62, KX 1057, ¶ 28).

16 Kline's '97 abstract, like the '96 abstract, reports testing ISS and
17 Schistosome eggs on mice, followed by subsequent SEA airway challenge. The
18 Kline abstract contains a statement that ISS co-administered with Schistosome
19 eggs, but not ISS alone, lead to decreased airway eosinophilia. As with the '96
20 abstract, this statement is ambiguous as to the experimental design. (RX 2001,
21 ¶ 72, KX 1057, ¶ 29). One possible interpretation is that the language "but not"
22 ISS refers to a control to demonstrate that the ISS did not appear to effect airway
23 eosinophilia. (RX 2001, ¶ 73).

24 One of ordinary skill in the art would have understood that Kline's 98 article
25 describes in a detailed manner the experiments reported in Kline's '96 and '97
26 abstracts. (RX 2001, ¶ 76). Kline's '98 article reports that sensitized mice that
27 were administered ISS and egg had the lowest eosinophil count and thus a marked
28 decrease in the development of airway inflammation. (*Id.* at ¶ 83). In discussing

1 its findings, Kline's article includes a statement that CpG OND (ISS) alone did not
2 offer significant protection against the development of airway inflammation. (*Id.*
3 at ¶ 81). As with the Kline abstracts, this statement is ambiguous as there is no
4 data to provide context for this statement. (*Id.* at ¶ 83). One of ordinary skill in the
5 art could interpret the statement as a reference to controls wherein an ISS was
6 administered to non-sensitized mice without co-administration of an antigen. (RX
7 2001, ¶ 83 and KX 1057, ¶ 30).

8 Kline's '96 and '97 abstracts and '98 article provide ambiguous statements
9 regarding the use of an ISS alone in the treatment of asthma. As the statements are
10 ambiguous, we find that Kline's abstracts and article fail to lead one of ordinary
11 skill in the art to expect that treating asthma with an ISS without the co-
12 administration would be ineffective. (KX 1057, ¶ 27).

13 Additionally, Raz fails to take into account the contemporaneous statements
14 made in Raz's own co-authored article. Specifically, Raz seeks to rely upon the
15 teachings of Kline's abstracts and article to demonstrate that one skilled in the art
16 would have understood that ISS alone would be ineffective in treating asthma. Raz
17 however, fails to explain how Raz's own contemporaneous statements regarding
18 the abstracts and article are consistent with Raz's post-interference positions.

19 Raz's coauthored Broide '98 article tested an ISS without co-administration
20 of an antigen. The Broide '98 article does not identify an "expectation" that ISS
21 alone would be ineffective. Rather, Raz's article characterized its ISS test
22 observations as "similar" to those noted in Kline's 98 article, which reported test
23 data for co-administering ISS and antigen. Further, Broide and Raz reported that
24 they had "extended" upon Kline's observations. (RX 2012, p. 7059, col. 2 to 7060,
25 col. 2).

26 We give greater weight to Raz's contemporaneous 1998 article than Raz's
27 subsequent interference arguments and testimony of Dr. Schleimer. The Broide

1 '98 article was prepared prior to Raz's involvement in this interference proceeding.
2 The Broide '98 article was presented and addressed to those actually working in
3 the art and was not specifically prepared to advance an interference position. The
4 '98 article stands in a position analogous to that of the affidavit evidence in *In re*
5 *Carroll*, 601 F.2d 1184 (CCPA 1979). The CCPA gave great weight to an
6 affidavit submitted prior to the making of the claimed invention. As explained by
7 the CCPA:

8 Unlike the usual expert opinion, prepared either by the applicant
9 himself, or on his behalf after the controversy has arisen, Dr. Merkai's
10 opinion was formulated prior to the making of the claimed invention.
11 It was therefore completely untainted by either hindsight or bias.

12
13 *Id.* at 1186. Broide's '98 publication stands on a similar footing as it was prepared
14 independent of any involvement in the current interference proceeding and is
15 entitled to greater weight than Raz's current arguments, and the conclusions of its
16 expert as they are made in the context of the interference almost a decade after
17 Broide published.

18 We credit Raz's contemporaneous statements that its use of an ISS without
19 antigen is an extension of Kline observations. We do not credit Raz and its
20 expert's post-interference contention that one of ordinary skill in the art would
21 have expected that an effective treatment of asthma with ISS would have required
22 the co-administration of an antigen.

23 Raz has failed to meet its burden of proof and demonstrate that Krieg's
24 earlier filed '652 and '774 applications lack sufficient written description for the
25 treatment of asthma using an ISS without the co-administration of an antigen.
26 Specifically, we credit the testimony of Dr. Center and find that the plain language
27 of Krieg's earlier filed applications reasonably conveys to one of ordinary skill in
28 the art that Krieg invented a method of treating asthma involving the

1 administration of an ISS where the ISS “can be” co-administered with an antigen.
2 We do not credit Dr. Schleimer’s testimony to the contrary as it seeks to read a
3 requirement into Krieg’s specifications based on an alleged expectation that is not
4 supported by the record.

5
6 4. Krieg’s ‘652 and ‘774 Applications Teach One of Ordinary
7 Skill in the Art How to Make and Use the Claimed Invention
8

9 Raz contends that Krieg lacks § 120 benefit of the ‘652 and ‘774
10 applications as the applications fail to enable a method of administering ISS,
11 without limitation to the administration of an antigen. (Paper 50, p. 4, ll. 20-22).
12 Accordingly, the question presented is whether one of ordinary skill in the art
13 following the teachings contained in Krieg’s ‘652 and ‘774 application could have
14 made and used the claimed invention without undue experimentation where the
15 sole point of difference in dispute is whether one of ordinary skill in the art could
16 administer an ISS to treat asthma without co-administering an antigen. (Paper 50,
17 p. 15, ll. 18-20).

18 Raz contends that the state of the art, the breadth of the claims and the lack
19 of direction or guidance presented in the specification demonstrates that undue
20 experimentation would have been required to practice the full scope of Krieg’s
21 claims. (Paper 50, p. 14, ll. 12-15). We consider the three cited Wands factors but
22 also consider the level of skill in the art and the quantity of experimentation needed
23 to be performed.

24 Raz’s sole argument as to the breadth of Krieg’s claims is that Krieg’s
25 claims encompass at least two embodiments: methods of treating asthma by
26 administering an ISS with or without the co-administration of an antigen. (Paper
27 50, p. 14, ll. 17-23).

28 We find that the level of skill in the art was high. Specifically, we credit the

1 testimony of Dr. Schleimer and Dr. Center that a person of ordinary skill in the
2 immunological arts would have an advanced degree, M.D. or Ph.D., in
3 immunology, molecular biology or similar discipline and several years of
4 laboratory or clinical experience with immune responses and/or asthma. (RX
5 2001, ¶ 16 and KX 1003 at ¶ 10).

6 We agree with Raz that the state of the art was such that one of ordinary skill
7 in the art would have required experimental test data before definitely concluding
8 that an ISS alone could be used to treat asthma. (RX 2001, ¶ 135). Yet, the test for
9 enablement does not preclude some experimentation only undue experimentation.

10 Additionally, with respect to the state of the art, Raz does not dispute that
11 those of skill in the art were aware of ISS's. (RX 2001, ¶¶ 53-55). Raz also does
12 not dispute that those of skill in the art were familiar with treating asthmatic
13 subjects. Nor does Raz dispute that those of skill in the art were aware that ISS's
14 had previously been administered to asthmatic subjects. (See, e.g., RX 2001, ¶¶
15 59-60).

16 We find that Raz fails to establish that Krieg provides insufficient guidance
17 to one of ordinary skill in the art. Specifically, Raz fails to state what additional
18 step or teaching was lacking in Krieg such that one of ordinary skill in the art could
19 not practice the claimed invention, absence of co-administering an antigen. At
20 most Raz states that Krieg fails to provide sufficient guidance due to a lack of
21 working examples. (*Id.* at p. 15, l. 18 to p. 16, l. 11). Yet, Raz has failed to
22 establish that Krieg fails to provide sufficient guidance to one of ordinary skill in
23 the art as: 1) ISS's were known compounds, 2) asthmatic subjects were known in
24 the art, 3) Krieg provides an Example 12⁴ that reports administering ISS and an
25 antigen in a murine model of asthma, and 4) the sole difference in dispute is

4 For purposes of this decision we treat Krieg Example 12 as prophetic in nature.

1 whether one skilled in the art could administer the ISS without also co-
2 administering a second compound, an antigen.

3 Raz does not allege that the quantity of testing was excessive in order to
4 practice the invention. We find that a limited quantity of routine testing was
5 required to establish that an ISS could be used to treat asthma without the co-
6 administration of an antigen. The basis for this finding is Raz' own 1998
7 publication, Broide '98, which identifies its observations as extending upon
8 Kline's. (RX 2012).

9 In view of the strong factors in favor of enablement, high level of skill in the
10 art, limited quantity of routine testing necessary to practice the invention, the use
11 of known compounds administered to a known class of subjects, and a prophetic
12 example detailing the administration of the ISS to an asthmatic subject (albeit co-
13 administering an additional compound) we hold that Raz has failed to demonstrate
14 that Krieg's '652 and '774 applications would have required one of ordinary skill
15 in the art to practice the claimed method of treating asthma using an ISS, with or
16 without an antigen.

17 Raz Motion 3 for judgment on prior art is *denied*.

18

19 C. Krieg Continent Responsive Motion 4: To Add New Claims

20 Krieg Motion 4 is a contingent motion that seeks to add new claims 104 and
21 105 to Krieg's involved application. (Paper 79, p. 1, ll. 1-2). Krieg's motion is
22 contingent upon the grant of Raz Motions 1 or 3, which allege that all of Krieg's
23 involved claims are unpatentable to Krieg. Raz Motions 1 and 3 are denied and as
24 such, the contingency has not come to pass. Krieg Motion 4 is dismissed as moot.

25

26 D. Raz Substantive Motion 2 for Judgment of No Interference-in-Fact

27 Raz Substantive Motion 2 requests that judgment be entered that no

1 interference-in-fact exists between the parties. (Paper 48, p. 1, ll. 2-7). Krieg
2 opposes. (Paper 100, p. 1, ll. 2-10).

3 Raz contends that Krieg's claims fail to anticipate and/or render obvious
4 Raz's involved claims. Generally, Raz states that its claims treat asthma by
5 administering an immunostimulatory peptide *without* administering an antigen.
6 Raz states that Krieg's claims do not recite whether its method of treatment is
7 without an antigen. From this, Raz concludes that Krieg's claims would not have
8 anticipated Raz's method of treatment and further states that administering an
9 immunostimulatory peptide without antigen would not have been obvious to one of
10 ordinary skill in the art. (*Id.* at p. 1, l. 23 to p. 2, l. 14).

11 The rules specifically provide that an interference-in-fact exists as follows:

12 *Interfering subject matter.* An interference exists if the subject matter
13 of a claim of one party would, if prior art, have anticipated or
14 rendered obvious the subject matter of a claim of the opposing party
15 and vice versa.

16
17 37 C.F.R. § 41.203(a). Raz does not dispute that Raz's claims would, if prior art,
18 anticipate and/or render obvious Krieg's claims. Accordingly, the issue before us
19 is whether Krieg's claims, *taken as prior art*, anticipate or render obvious Raz's
20 claims, and vice versa.

21

22 1. Krieg Claim 44 Anticipates Raz Claim 17

23 The plain language of Krieg claim 44 does not require presence of antigen.
24 Raz argues, and Krieg agrees, that Krieg claim 44 is generic with respect to the
25 administration of an ISS with or without antigen. (Paper 48, p. 6, l. 11 to p. 7, l. 3,
26 Paper 100, p. 4, ll. 22-23). Accordingly, there are two options, antigen or no
27 antigen. Here, we find that the small genus of two (with or without antigen)
28 anticipates the species (without antigen). *In re Petering*, 301 F.2d 676 (CCPA

1 1962) (Prior art reference disclosing limited genus of 20 compounds rendered
2 every species within the genus unpatentable); *In re Schaumann*, 572 F.2d 312
3 (CCPA 1978) (Prior art embraces very limited number of compounds closely
4 related to one another inevitably leading to the conclusion that the prior art
5 provides a description of those compounds and bars later claim covering those
6 compounds).

7 Raz Reply 2 contends that one of ordinary skill in the art would not have
8 been able to envisage the administration of an ISS without an antigen. (Paper 118,
9 p. 1, l. 22 to p. 2, l. 6). Raz states that one of ordinary skill in the art could not
10 have envisaged the without co-administration of an antigen species as the art was
11 not predictable and administering an ISS alone was not a known option. (*Id.* at p.
12 7, ll. 16-23).

13 Raz's "envisage" argument is not persuasive as one of the only two options
14 of Krieg claim 44 anticipates Raz claim 1. Specifically, Krieg claim 44 requires
15 only the administration of an ISS and make no mention of an antigen. Further, Raz
16 has acknowledged that one of ordinary skill in the art would understand that
17 Krieg's involved claims encompass methods wherein ISS is not co-administered
18 with an antigen. (Paper 50, p. 5, ll. 14-16). Raz's "envisage" argument is in
19 essence an attack on whether one of ordinary skill in the art would have understood
20 that co-administration of an antigen was required for efficacy. Anticipation
21 however, only requires that the suggestions in a reference be enabled and does not
22 require proof of efficacy. *Rasmusson v. SmithKline Beecham Corp.*, 413 F.3d
23 1318, 1325-26 (Fed. Cir. 2005) ("[A] prior art reference need not demonstrate
24 utility in order to serve as an anticipating reference under section 102.").

25 Additionally, for purposes of a no interference-in-fact analysis, Krieg's
26 claims are assumed to be *prior art*. 37 C.F.R. § 41.203(a). That is, Krieg's claims
27 are assumed to be described and enabled for their full scope and prior in time to

1 Raz's claims.

2 A motion for no interference-in-fact presents a very narrow question: are the
3 parties claiming the same subject matter? A no interference-in-fact motion is not a
4 motion for judgment that an opponent's claims are unpatentable for failure to
5 comply with the written description and enablement requirements. Nor is a motion
6 for no interference-in-fact a motion for judgment that an opponent's claims do not
7 represent prior art to the moving party. These issues are to be raised and
8 considered in separate motions, such as in Raz's Motion 1 discussed above, which
9 requests judgment against Krieg's involved claims for lack of sufficient written
10 description and/or enablement.

11 Again, both parties agree that one of ordinary skill in the art would have
12 understood that Krieg claim 44 is generic with respect to administration of an
13 antigen, i.e., it encompasses administering an ISS with or without an antigen.
14 Applying the test set forth in 37 C.F.R. § 41.203(a), the full scope of Krieg's claim
15 is presumed to be described, enabled and prior in time to Raz. Krieg's genus
16 encompasses two embodiments and, under the facts before us, the described and
17 enabled genus of two anticipates both species covered by the genus.

18 Raz Motion 2 for no interference-in-fact is *denied*.

19

20 E. Krieg Substantive Motion 2 for Judgment Based on Lack of Sufficient
21 Written Description and/or Enablement

22

23 Krieg Substantive Motion 2 moves for judgment against all of Raz's
24 involved claims alleging that the claims are unpatentable for lack of sufficient
25 written descriptive support and/or enablement. (Paper 34, p. 1, ll. 3-6). Raz
26 opposes. (Paper 101).

27 Raz's claims are generally directed to a method of treating asthma by
28 administering an immunostimulatory polynucleotide comprising an

1 immunostimulatory sequence (ISS) to a mammal sensitized to an asthma-
2 stimulating antigen where the polynucleotide is administered without the antigen.
3 (Raz Copy of Claims, Paper 8, Claim 1). Several of Raz's involved claims limit
4 the size of the ISS to at least six nucleotides in length. (*Id.* at claims 2-4, 6, and
5 17).

6 Krieg contends that the claims are unpatentable due to their "extreme
7 breadth" in relation to the disclosure contained in Raz's specification. (*Id.* at p. 1,
8 l. 9 to p. 2, l. 2). More particularly, Krieg contends that Raz's claims 1) fail to
9 describe and enable unmethylated ISSs and ISSs of less than six nucleotides in
10 length, 2) fail to describe or enable the claimed immunostimulatory
11 polynucleotides, which can be relatively large and include plasmids of 30,000
12 nucleotides in length, 3) fail to teach one of ordinary skill in the art to identify the
13 antigens that are excluded from the claims.

14

15 1. Findings of Fact

16 The following findings of fact are believed to be supported by a
17 preponderance of the evidence. These findings are in addition to those discussed
18 above.

19 a. Raz's Involved '148 Specification

20 72) Raz's '148 patent issued from application 09/235,742, filed January 21,
21 1999, which is the date for determining written description and enablement of
22 Raz's involved claims.

23

24 73) Raz's '148 patent relates to methods and oligonucleotide compositions for
25 use in reducing or suppressing granulocyte-mediated inflammation and modulating
26 immune responsiveness to an antigen. The main therapeutic goals of Raz's patent
27 are the treatment of inflammation and boosting of the immune responsiveness with

1 a Th1 phenotype against a sensitizing antigen. ('148 Patent, KX 1001, col. 1, ll.
2 23-26 and col. 3, l. 66 to col. 4, l. 2).

3

4 74) Raz's patent states that an example of a therapeutic use for its invention is
5 the control of asthma. (*Id.* at col. 2, ll. 21-24).

6

7 75) The patent states that the invention provides a means to shift a immune
8 response to an antigen away from a Th2 response to a Th1 response. (*Id.* at col. 2,
9 ll. 35-37).

10

11 76) The patent defines the immunostimulatory sequences of the invention as six
12 (6) nucleotides or greater in length. Specifically, the '148 patent states:

13 Structurally, ISS-ODN are non-coding oligonucleotides 6 mer or
14 greater in length which may include at least one unmethylated CpG
15 motif.

16

17 (*Id.* at col. 8, ll. 31-33).

18

19 77) The patent reiterates that the ISS is at least 6 mer in length and goes
20 on to state that one skilled in the art could readily identify ISS's.

21 Specifically, the patent teaches that:

22

23 The core hexamer structure of the foregoing ISS-ODN may be flanked
24 upstream and/or downstream by any number or composition of
25 nucleotides or nucleosides. However, ISS-ODN are at least 6 mer in
26 length, and preferably are between 6 and 200 mer in length, to
27 enhance uptake of the ISS-ODN into target tissues. Those of ordinary
28 skill in the art will be familiar with, or can readily identify, reported
29 nucleotide sequences of known ISS-ODN.

30

31 (*Id.* at col. 8, ll. 43-50).

32

1 78) Raz's patent states that the ISS can be incorporated into a delivery vector,
2 such as a plasmid. (*Id.* at col. 9, ll. 57-62).

3

4 79) A plasmid is a double-stranded circular nucleic acid of restricted size,
5 generally about 1,000 to 30,000 nucleotides in length. (Declaration of Dr. Wallner,
6 KX 1011, ¶ 16 and KX 1019, p. 137, col. 2).

7

8 80) Raz Example V provides an example of polynucleotide plasmid (pCMV-
9 LacZ) that contains an ISS. (KX 1001, col. 18, l. 61 to col. 20, l. 2).

10

11 81) Raz does not provide an example of a method of treating asthma using a
12 plasmid that contains an ISS but not an antigen. (KX 1011, ¶ 21).

13

14 b. Relevant Facts Admitted by the Parties

15 82) Not all plasmids, or other polynucleotides, containing ISSs with CG
16 nucleotides would be useful in the treatment of asthma. (Krieg Reply 2, Paper 114,
17 ¶ 53).

18

19 83) To select other polynucleotides (including plasmids) for insertion of ISSs for
20 use within the scope of Raz's involved claims, one of ordinary skill in the art would
21 have to experiment with each different ISS to determine if it remained
22 immunostimulatory in a particular polynucleotide. (*Id.* at ¶ 57).

23

24 84) One of skill would also have to experiment to determine where the ISS
25 should be placed in a particular polynucleotide. (*Id.* at ¶ 58).

26

27

1 c. Testimony of Dr. Barbara Wallner

2 85) Dr. Wallner testifies that Raz's claims do not limit the upper limit of the
3 length of the immunostimulatory sequence. (KX 1011, ¶ 41).

4

5 86) Raz's claimed CG could be located at any position along the length of the
6 immunostimulatory sequence. (*Id.*).

7

8 87) Since there are only four types of nucleotides in plasmids (A, C, G, T) there
9 is a high likelihood that C and G will be adjacent to each other, for example there
10 are hundreds of CG-containing sequences in the plasmids pKCB and PCMV. (*Id.*
11 at ¶¶ 29-31 and 37).

12

13 88) Plasmids were known in 1997 as having potential use in one of two
14 therapeutic purposes: gene therapy and DNA vaccines. (*Id.* at ¶ 43).

15

16 89) The use of plasmids in a mammal for therapeutic purposes was, and
17 *remains*, unpredictable. (*Id.* at ¶ 46).⁵

18

19 d. Relevant Cross Examination Testimony

20 90) On cross-examination Dr. Wallner testified:

21 Q. Now, during the time period of, let's say 1997, was it
22 generally understood by those of ordinary skill in the art that when
23 reference was made to CpG-containing immunostimulatory
24 sequences, that those nucleic acid sequences were unmethylated?
25

5 Most of Dr. Wallner's testimony is directed to the state of the art as of 1997. The date for determining written description and enablement for the involved Raz claims is January 21, 1999. In this respect we focus on Dr. Wallner's testimony that plasmids were and remain unpredictable.

1 A. I think it – in my opinion it was, since the
2 immunostimulatory properties were seen with DNA extracted from E.
3 coli and oligonucleotides that had not been methylated.
4

5 (RX 2042, p. 83, ll. 9-18).
6

7 91) On cross-examination Dr. Center testified:

8 Q. Based on that body of literature, would one of ordinary skill in
9 the art in the 1995 to 1998 time frame have understood a reference to
10 CpG-containing sequences that are immunostimulatory as being
11 unmethylated?

12 A. Yes.
13

14 (RX 2043, p. 70, ll. 2-7).
15

16 2. Analysis of Raz's Enablement

17 a. Raz's ISSs are Unmethylated

18 Raz's claims require the presence of ISS that is a CG-containing sequence.
19 The claims do not literally state that the CG sequence is unmethylated.

20 Krieg contends that Raz's claims encompass methylated CG sequences.
21 (Paper 34, ¶ 23). Dr. Wallner testifies in support of Krieg and states that none of
22 Raz's claims require that the CG sequences are unmethylated. (KX 1011, ¶ 10).
23 Krieg contends that Raz's claims lack enablement due to the failure to identify the
24 CG sequence as unmethylated.

25 Raz's specification identifies the ISS CG sequences as conforming to the
26 unmethylated CpG motif. (KX 1001, col. 8, ll. 31-33). Dr. Wallner and Dr. Center
27 testified on cross-examination that one of ordinary skill in the art would have
28 understood that references to CpG-containing sequences referred to unmethylated
29 sequences. (RX 2042, p. 83, ll. 9-21 and RX 2043, p. 70, ll. 2-7). We hold that
30 one of ordinary skill in the art would understand that Raz's claimed ISS is an

1 unmethylated CpG containing sequence.

2
3 b. Raz's Involved Claims Lack an Enabling Disclosure for
4 Plasmid Polynucleotides
5

6 Krieg contends that undue experimentation is required to practice the full
7 scope of Raz's claimed invention. Raz disagrees.
8

9 i. Claim Construction

10 Raz claim 1 recites a method for treating asthma by administering a
11 immunostimulatory polynucleotide comprising an ISS. Raz claim 1, and its
12 dependent claims, do not recite an upper limit on the size of the
13 immunostimulatory polynucleotide or the ISS.

14 Krieg Motion 2 cites as fact that Raz's polynucleotide can be as large as
15 1,000 to 30,000 nucleotides in length. Thus, the claim encompasses administration
16 in a plasmid. (Paper 34, ¶ 40, citing KX 1011, ¶ 16 and Raz's '148 patent, KX
17 1001, col. 9, ll. 57-62). Raz responded to this statement with "Unable to admit or
18 deny." Raz however, does state in its opposition that one of ordinary skill in the
19 art would recognize that plasmids could be within the scope of its claimed
20 invention so long as they contained the recited CpG ISS motif and did not encode
21 an asthma stimulating antigen. (Paper 101, p. 12, ll. 9-11 and p. 14, ll. 10-13).

22 We provide Raz's claims with their broadest reasonable construction. The
23 plain language of Raz's claims do not limit the upper length of the polynucleotide
24 or ISS and Dr. Wallner has testified that one skilled in the art would understand the
25 nucleotide to encompass plasmids. We find Dr. Wallner's testimony to be
26 consistent with Raz's specification as the specification identifies plasmids as
27 suitable delivery vectors. Accordingly, we hold that Raz's claims encompass, *inter*

1 *alia*, administration via plasmid, including those having 30,000 nucleotides.

2

3 ii. Undue Experimentation Required to Practice Raz's
4 Method of Treating Asthma with Immunostimulatory
5 Plasmid Polynucleotides
6

7 Raz's claimed immunostimulatory polynucleotide comprising an ISS
8 encompasses an enormous number of potential ISS sequences and polynucleotides.
9 There is no defined upper limit on the length of the polynucleotide and ISS. As
10 acknowledge by Raz, its claimed polynucleotide encompasses polynucleotides of
11 great length, including plasmids that contain an ISS and meet the functional
12 limitations of the claims. Plasmids however, can be as long as 30,000 nucleotides.
13 Additionally, the breadth of the claim is compounded by the fact that there is no
14 defined structural limitation on the location and placement of the ISS within the
15 polynucleotide.

16 The art was unpredictable. Dr. Wallner testifies that the use of plasmids
17 was, and remains, unpredictable for use in the therapeutic treatment of mammals.
18 (KX 1011 at ¶ 46). Accordingly, we find that one of ordinary skill in the art would
19 have been unable to predict whether a particular plasmid having an ISS would be
20 effective in the treatment of asthma absent testing. (See, e.g. KX 1011, ¶ 49).

21 Raz's specification provides no examples using a plasmid within the scope
22 of its claims for the treatment of asthma. Further, Raz's specification provides
23 little guidance as to which plasmid polynucleotides, and which ISS location on the
24 plasmids would be effective for the treatment of asthma.

25 One of ordinary skill in the art would be required to conduct a vast number
26 of experiments to make and use the full scope of the claim. Specifically, each
27 plasmid polynucleotide having an ISS in every potential position would have to be
28 tested in a mouse model of asthma in order to determine whether it would be

1 effective to treat asthma.

2 We find that the skill in the art was high. Specifically, a person of skill in
3 the art possessed an M.D. or Ph.D. with several years of experience. (RX 2001,
4 ¶ 15).

5 Balancing the various *Wands* factors we hold that Raz's claims are
6 unpatentable for lack of enablement. Specifically, the sheer breadth of the claims,
7 the unpredictability of the art, the lack of working examples and guidance as to
8 which plasmid/ISS polynucleotides would be effective and the vast amount of
9 experimentation necessary leads to a conclusion that undue experimentation is
10 required to practice the full scope of Raz's involved claims.

11 Raz disagrees that undue experimentation was required and contends that the
12 art described and enabled CpG-containing immunostimulatory plasmids. (Paper
13 101, p. 14, ll. 4-6). Raz contends that the prior examples of immunostimulatory
14 plasmids combined with its disclosure would have enabled one of ordinary skill in
15 the art to practice the full scope of the claims. Raz however, fails to direct our
16 attention to sufficient and credible evidence to support its conclusion that one
17 skilled in the art could make and use plasmid nucleotide ISSs for the treatment of
18 asthma.

19 Raz also contends that one of ordinary skill in the art would have been aware
20 of the problems with plasmids (gene therapy and DNA vaccines) and, as a practical
21 matter, may have been less likely to select a plasmid as an immunostimulatory
22 polynucleotide in the context of Raz's involved claims. (Paper 101, p. 13, ll. 11-
23 14). The question presented is whether one of ordinary skill in the art could make
24 and use the full scope of the claim and not only that which they may be more likely
25 to select. Further, Raz's specification explicitly states that the ISS can be
26 incorporated into a delivery vector, such as a plasmid. (*Id.* at col. 9, ll. 57-62).
27 Thus, rather than lead one of ordinary skill in the art away from plasmids, Raz's

1 specification actually guides one of ordinary skill to employ plasmids.

2 Raz further contends that one of ordinary skill in the art would understand
3 that the claimed immunostimulatory sequences would ordinarily be
4 oligonucleotides ranging from 6 to 200 nucleotides. Raz's involved claims are not
5 limited to such oligonucleotides.

6 We hold that Krieg has met its burden of proof that Raz's involved claims
7 lack an enabling disclosure for the full scope of the claims. Krieg Substantive
8 Motion 2 is *granted*.

9

10 F. Krieg Substantive Motion 1 for Judgment Based on Interference
11 Estoppel
12

13 Krieg Motion 1 requests that all of Raz's involved claims be held
14 unpatentable based on a lost count interference estoppel arising from prior
15 interference 105,171. (Paper 33). All of Raz's involved claims have been held
16 unpatentable for lack of enablement. Accordingly, we dismiss Krieg Motion 1 as
17 moot.

18

19 G. Krieg Substantive Motion 3 for Judgment Based on Prior Art

20 Krieg Motion 3 alleges that Raz's involved '148 patent is not entitled to 35
21 U.S.C. §120 benefit of Raz's earlier filed '120 application due to an alleged lack of
22 copendency between the applications. Krieg alleges that, absent benefit of the
23 earlier '120 application, Raz's involved claims are unpatentable over prior art.
24 (Paper 35, p. 2, ll. 1-7). Krieg characterizes the prior art as teaching the
25 administration of a plasmid to treat allergic airway inflammation which is observed
26 in allergic asthma. (Paper 35, p. 18, Declaration of Dr. Center, KX 1003, ¶ 65).
27 Krieg Motion 3 is dismissed as moot as all of Raz's involved claims have already

1 been held unpatentable to Raz.

2

3 H. Raz Contingent Responsive Motion 5 to Revive Parent Application

4 Raz Motion 5 is contingent upon a finding that Raz's parent '120 application
5 was not copending with Raz's '742 application, which issued as Raz's involved
6 '148 patent. (Paper 91, p. 1, ll. 3-7). Raz Motion 5 is dismissed as moot as the
7 contingency did not come to pass.

8

9 I. Raz Contingent Motion 6: Request to Redefine the Interfering Subject
10 Matter by Adding an Application and New Claim to the Interference

11

12 Raz requests that the Board exercise its discretion and redeclare the
13 interference by adding Raz's 10/229,208 application to the interference with a new
14 count directed to the subject matter of Raz '208 claim 58 or Krieg claim 44.
15 (Paper 92, p. 1, ll. 3-5 and p. 9, ll. 5-8). Raz Contingent Responsive Motion 6 is
16 contingent upon a finding that all of Raz's presently involved claims are
17 unpatentable to Raz based on the grounds presented in Krieg Substantive Motions
18 1, 2 and/or 3. (*Id.*). Raz's contingency has come to pass as we granted Krieg
19 Substantive Motion 2 and held that all of Raz's involved claims are unpatentable.

20 Raz '208 claim 58 reads as follows:

21 A method for treating asthma, comprising: administering to a
22 mammal sensitized to an asthma-stimulating antigen an
23 immunostimulatory polynucleotide comprising an immunostimulatory
24 sequence (ISS), wherein the ISS comprises the sequence 5'-cytosine-
25 guanine-3', ***wherein the immunostimulatory polynucleotide has a***
26 ***length of 6 to 200 nucleotides***, wherein the immunostimulatory
27 polynucleotide does not comprise a nucleotide sequence encoding the
28 antigen, and wherein the immunostimulatory polynucleotide is
29 administered without the antigen, including without a polynucleotide
30 encoding the antigen, and in an amount sufficient to treat asthma.

31

1 (Paper 92, p. 3, ll. 5-13, emphasis added). Raz claim 58 differs from Raz's
2 involved claims as it limits the upper and lower length of the immunostimulatory
3 polynucleotide. By limiting the upper length Raz has excluded immunostimulatory
4 plasmids from its claims. (Raz Reply 6, Paper 121, p. 4, ll. 21-23).

5 Raz contends that claim 58 is described, enabled and patentable over the
6 prior art. Raz acknowledges that, assuming Raz's no interference-in-fact motion is
7 denied, that claim 58 would interfere-in-fact with Krieg claim 44. (*Id.* at p. 10, ll.
8 5-6).

9
10 1. Requirements for Adding a Claim

11 Raz, as moving party, has the burden of establishing that it is entitled to the
12 relief requested. The interference rules provide that a party seeking to add a claim
13 has the burden of showing the patentability of its claims. 37 C.F.R. § 208(c)(1).
14 Consistent with the rules, the Standing Order (Paper 2) requires that a motion to
15 add a claim explain why the proposed claim overcomes the patentability problem.

16
17 a. Krieg's Procedural Objection to Raz's Motion

18 Raz's motion is said to be responsive to Krieg Motions 2 and 3, which allege
19 that Raz' involved claims are unpatentable under §112, 1st paragraph and §102(b).
20 Raz's motion addresses some, but not all, of Krieg's contentions on patentability.
21 Raz justifies its failure to address the additional contentions stating that they have
22 no merit and that there is nothing in the Standing Order or the rules that requires
23 Raz to present a claim to overcome "meritless" arguments. (Paper 121, p. 2, ll. 16-
24 19). The fact that Raz considers Krieg's additional unpatentability contentions
25 meritless does not allow Raz to simply ignore Krieg's contentions for it is the
26 Board, not Raz, that evaluates the merits of the parties' contentions.

27

1 Raz, at a minimum, should have commented upon Krieg's additional
2 unpatentability contentions. The record however, is clear as to the parties'
3 positions regarding the patentability of Raz claim 58. Additionally, Krieg has not
4 demonstrated that it was prejudiced by Raz's failure to address the additional
5 contentions. Accordingly, we take no action regarding Raz's alleged non-
6 compliance with the requirements of the Standing Order or the rules.

7
8 2. Findings of Fact

9 The following findings of fact are relevant to the patentability analysis of
10 Raz claim 58, with emphasis on compliance with the written description and
11 enablement requirements of 35 U.S.C. § 112, 1st paragraph.

12
13 a. ISSs Were a Recognized Class of Compounds

14 92) One of ordinary skill in the art as of September 1997 would have been
15 familiar with the concept of ISSs based on the Krieg's published work. (Dr.
16 Wallner Declaration, RX 1011, ¶ 7).

17
18 93) Dr. Center testified on cross-examination as follows:

19 The reporter: Question: So the recitation, the description
20 of the composition in the Raz claims is sufficient to indicate to one of
21 ordinary skill in the art the class of compositions that are intended to
22 be used in the method; is that your testimony?

23 Dr. Center: I think in general, yes, the structure is
24 defined adequately for one - - anyone in the art to have presumed that
25 similar structures would be effective.

26
27 (RX 2043, p. 76, l. 17 to p. 77, l. 2).

1 94) Dr. Center also testified:

2 Q. What were you referring to when you said "immunostimulatory
3 nucleic acids"?

4 A. I was referring to the general class of DNA that effects immune
5 responses of which the specifics that, Krieg's work, and others were
6 unmethylated CpG containing immunostimulatory.

7 Q. So those unmethylated CpG-containing immunostimulatory
8 sequences were a class of compositions that were known in the art as
9 of 1998?

10 A. Yes, from published, then oral presentations.

11 Q. Do you recall offhand any of the publication that would have
12 described that general class of compositions?

13 A. A. There were a number of abstracts submitted to the, I guess
14 then called the American Federation for Clinical Research meetings,
15 for which oral presentations by, I believe either Dr. Krieg or Dr. Kline
16 presented their data. And there were also publications by both Krieg's
17 group and other groups which used those compositions in animal
18 models and in vitro.

19

20 (*Id.* at p. 69, l. 4 to p. 70, l. 1.).

21

22 95) Dr. Center also testified that one of ordinary skill in the art would have been
23 able to generally predict whether or not a particular CpG nucleotide would have
24 immunostimulatory effects. Specifically, Dr. Center testified:

25 Q. Is it true that with respect to any CpG-containing nucleic acid
26 sequence you could determine based on the sequence alone, without
27 the use of these assays, that that sequence was immunostimulatory?

28 A. I don't understand how you would -- if you didn't have a marker
29 assay, how you would determine anything.

30 Q. Well, there would be a sequence on a piece of paper, you would
31 be able to identify that it is CpG-containing, and based on your
32 observation and analysis of that sequence you could say that is
33 immunostimulatory.

34 A. Based upon previously published information that was existing
35 in the literature, one would be able to in general predict whether or not
36 the CpG peptides or CpG nucleotides would have immunostimulatory
37 effects based upon the context in which the CpG was nested.

1 Q. And this is in the time frame of '95 to '98?

2 A. Yes.

3 (*Id.* at p. 72, l. 19 to p. 73, l. 16).

4

5 96) Dr. Wallner testified in a prior interference (105,171) that ISSs were
6 known in the art prior to 1996 based upon the work of Krieg and Yamamoto.
7 (KX 2039, ¶ 40).

8

9 97) Dr. Wallner's testimony identified Yamamoto and Krieg as teaching
10 that certain sequences, e.g., GACGTC, AGCGCT, AACGTT and AACGTT,
11 were immunostimulatory sequences. (*Id.* at ¶¶ 44-45).

12

13 98) One of ordinary skill in the art as of 1996 would have understood that
14 ISSs could be six nucleotides in length. (*Id.* at ¶¶ 40-45).

15

16 99) One of ordinary skill in the art was aware of assays and experiments
17 that could identify whether a particular CpG containing polynucleotide was
18 immunostimulatory. (KX 2043, p. 71, l. 7 to p. 72, l. 4, KX2042, p. 51, l. 18
19 to p. 52, l. 16).

20

21 b. ISSs Placed in Plasmids May No Longer Function

22 100) Dr. Wallner testified on cross-examination that:

23 Q. So is it your opinion that the immunostimulatory sequences
24 that you identified in the control plasmid, if removed from the
25 plasmid, would not have an immunostimulatory effect?

26 A. I cannot say that. I don't know that. You would have to actually
27 do the experiment to show that.

28 Q. Okay. Of the numerous hexamers identified in the first table of
29 Exhibit 1016, which of these did you test for immunostimulatory
30 activity?

31

1 A. I tested none. I've never worked with immunostimulatory
2 sequences. And I could not test them unless I do an experiment.

3
4 (RX 2042, p. 111, l. 23, to p. 112, l. 11).

5

6 c. Asthma Stimulating Antigens Were a Known and
7 Identifiable Class of Compounds

8

9 101) Dr. Center testified that "most asthma-stimulating antigens are well known
10 allergens." (Declaration of Dr. Center, KX 1003, ¶ 94).

11

12 102) Dr. Wallner testified on cross-examination that:

13 Q. How would one of ordinary skill in the art determine -- strike
14 that. In the 1997 time period, was there any type of reference that one
15 of ordinary skill in the art could turn to to identify asthma-stimulating
16 antigens?

17 A. Yes. There are -- there's a list -- there was a list at that time
18 already provided through the FDA or NIH, I do not recall now.
19 There's a list of allergens that is publicly available. Or you could have
20 done a publication search through the PubMed to find allergens.

21 Q. Asthma-stimulating --

22 A. Yes.

23 Q. -- allergens? Is there also -- let me get this right -- an entity
24 known as the International Union of Immunological Societies that has
25 an allergen nomenclature subcommittee?

26 A. Right.

27 Q. And what's their purpose, what's the purpose of that
28 subcommittee?

29 A. Allergens have been purified and isolated over the last 20, 30,
30 40 years and given different names. One of their functions is to -- to
31 categorize those allergens and give them a common name so that they
32 can be used by all researchers under the same name.

33

34 (RX 2042, p. 69, l. 16 to p. 70, l. 18).

35

36

1 3. Patentability Analysis for Raz '208 Claim 58

2 Raz Motion 6 does not identify the relevant date for analyzing its
3 compliance with the written description and enablement requirements. Raz's '208
4 application was filed on August 26, 2002. (RX 2030, p. 1). Raz's Motion and
5 Reply 6 however, direct our attention to the state of the art in 1997, which is the
6 date Raz seeks for purposes of §120 benefit. (Paper 92, Appendix, Paper 121, e.g.,
7 p. 7, ll. 5-9 and 14-15). We err on the side of caution and analyze claim 58 of Raz
8 for compliance with the written description and enablement requirements as of
9 1997.

10
11 a. Written Description

12 Raz claim 58 requires an immunostimulatory polynucleotide having a length
13 of 6 to 200 nucleotides and does not encode an antigen. The immunostimulatory
14 polynucleotide comprises an ISS, which comprises the sequence 5'-cytosine-
15 guanine-3'. Raz '120 and '742 applications define the ISS-ODN as non-coding
16 oligonucleotides 6 mer or greater in length, preferably between 6 and 200 mer in
17 length. The applications also teach that the invention delivers ISS-ODN without
18 co-delivery of an immunizing antigen.

19 As recognized by Krieg, Raz's "ISS is the whole of or contained in the
20 immunostimulatory polynucleotide that is from 6-200 nucleotides in length, and
21 the ISS must contain a CG. (Paper 108, p. 6, ll. 4-5). Krieg contends that Raz
22 describes only a single immunostimulatory polynucleotide meeting the claim
23 limitations, DY 1018. (*Id.* at p. 6, ll. 9-11). Krieg states that the description of a
24 single sequence does not show possession of the broad scope of
25 immunostimulatory polynucleotide sequences. Krieg also contends that the prior
26 art taught that small sequences of less than eight nucleotides were not active.

1 Raz has demonstrated that the literal language of its applications supports
2 the claimed immunostimulatory polynucleotide and ISS. Further, Raz has
3 demonstrated that ISSs were a recognized class of compounds whose identity
4 could generally be predicted based upon sequence structure. Raz has also
5 demonstrated that one of ordinary skill in the art knew of assays and experiments
6 to confirm whether a particular sequence was immunostimulatory. Based on the
7 record presented, we find that Raz claim 58 complies with the written description
8 requirement as of the '120 applications September 5, 1997 filing date.

9
10 b. Enablement

11 Raz and Krieg dispute whether claim 58 requires one of ordinary skill in the
12 art to engage in undue experimentation to practice the full scope of the claim,
13 especially with respect to the immunostimulatory polynucleotides and ISSs. This
14 poses a difficult question as there are significant Wands factors favoring both
15 sides.

16 The factors against enablement include the fact that the art of treating
17 asthma with ISSs was unpredictable and that a significant quantity of
18 experimentation was required to practice the full scope of the invention. Further,
19 Raz failed to provide a working example falling within the scope of its claim.

20 The factors favoring enablement include the fact that the skill level in the art
21 was high and the state of the art in 1997 was sufficiently developed such that ISS
22 compounds were a generally recognized class of compounds.⁶ Further, one of
23 ordinary skill in the art could conduct routine testing on a mouse model of asthma

⁶ This is in contrast to the ISS plasmid polynucleotides. *Cf.*, Raz Opposition 2, Paper 101, p. 14, ll. 14-16, ("However, a person would also understand, based on the Raz disclosure and the teachings in the art, that immunostimulatory polynucleotides comprising a CpG-containing ISS would ordinarily be oligonucleotides ranging from 6-200 nucleotides.").

1 and determine whether a particular immunostimulatory polynucleotide having an
2 ISS was effective.

3 On balance, we find that the factors favoring enablement outweigh those
4 against. In particular we give more weight to the high level of skill in the art, the
5 fact that routine testing can determine whether a particular ISS is effective for
6 treating asthma, and that claim 58 is essentially directed to the use of known and
7 generally recognizable class of compounds to treat a known ailment. We hold that
8 Raz has met its burden of proof and established that claim 58 meets the enablement
9 requirement as of September 5, 1997.

10 Additionally, Krieg argues that the claim lacks enablement as Raz fails to
11 provide any description of antigens that stimulate asthma. We disagree as most
12 asthma-stimulating antigens are well known allergens and, at the time of the
13 invention, there was a known, publicly available, list of allergens.

14 All of Raz's presently involved claims of Raz's '148 patent are unpatentable
15 to Raz. Raz however, has demonstrated on this record that Raz '208 new claim 58
16 is patentable to Raz.

17 Based upon the facts presented we exercise our discretion as follows: Raz
18 Contingent Motion 6 is **granted** to the extent it requests that we authorize the
19 declaration of an interference between Raz '208 and Krieg '584 directed to the
20 subject matter of Raz '208 claim 58 and Krieg '584 claim 44 but **denied** to the
21 extent it requests that the present interference be redeclared with a new count
22 designating Raz's unpatentable claims as well as new claim 58 as corresponding to
23 the new count. Judgment is entered against Raz's involved unpatentable '148
24 claims.

25 Although we analyzed claim 58 in terms of the state of the art in 1997, we
26 are not aware of any prior art that renders Raz claim 58 unpatentable should it be
27 determined that Raz is not entitled to 120 benefit of its '120 application. As such,

1 we did not reach the issue of whether Raz is correct in stating that its petition to
2 revive overcomes the potential lack of copendency between its '120 and '742
3 applications. Thus, our decision on Raz Motion 6 is without prejudice to Krieg
4 raising the issue of improper copendency during an interference between Raz's
5 '208 application and Krieg's involved 584 application.

6

7 J. Raz Motion 4 to Designate Krieg Claims as Corresponding
8 Raz Motion 4 seeks to designate Krieg claims 46 and 82 to 84 as
9 corresponding to Count 1. (Paper 53). This motion is dismissed without prejudice
10 to Raz requesting that Krieg's claims be designated as corresponding to the count
11 in the interference between Raz '208 and Krieg '584.

12

13 K. Raz and Krieg's Motions to Exclude

14 Raz Miscellaneous Motion 7 seeks to exclude certain exhibits to the extent
15 Krieg relied upon them for the truth of the matter asserted. (Paper 126, p. 1, ll. 4-
16 16). Raz's motion is dismissed as moot as we did not rely upon the exhibits in the
17 disputed manner.

18 Krieg Miscellaneous Motion 5 seeks to exclude certain exhibits cited in Raz
19 Reply 2 or Raz Reply 4 as they violated the Standing Order prohibition on
20 presenting evidence that could have been presented in the underlying motion.
21 (Paper 190, p. 1, ll. 2-15). Krieg's motion is dismissed as moot as we denied Raz
22 Motion 2 and did not reach Raz Motion 4.

23 It is:

24 **ORDERED** that Raz Motion 1 for judgment based on lack of written
25 description and/or enablement is denied.

26 **FURTHER ORDERED** that Raz Motion 2 for judgment of no interference-
27 in-fact is denied.

1 **FURTHER ORDERED** that Raz Motion 3 for judgment based on prior art
2 is denied.

3 **FURTHER ORDERED** that Raz Motion 4 to designate claims is dismissed
4 as moot.

5 **FURTHER ORDERED** that Raz Miscellaneous Motion 5 to revive an
6 application is dismissed as moot.

7 **FURTHER ORDERED** that Raz Responsive Motion 6 to add a new
8 application, claim and substitute a count is granted-in-part.

9 **FURTHER ORDERED** that Raz Motion 7 to exclude evidence is
10 dismissed as moot.

11 **FURTHER ORDERED** that Krieg Motion 1 for judgment based on
12 interference estoppel is dismissed as moot.

13 **FURTHER ORDERED** that Krieg Motion 2 for judgment based on lack of
14 enablement and/or written description is granted.

15 **FURTHER ORDERED** that Krieg Motion 3 for judgment based on prior
16 art is dismissed as moot.

17 **FURTHER ORDERED** that Krieg Responsive Motion 4 to add claims is
18 dismissed as moot.

19 **FURTHER ORDERED** that Krieg Miscellaneous Motion 5 to exclude
20 evidence is dismissed as moot.

21

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23

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